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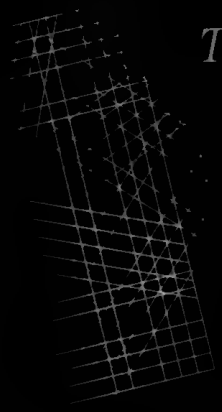

The Search for New Heroes

June 20, 1989
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COMPUTERWORLD

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3090 S models stir dispute over extent of chip reliability problem. Page 12.

Who owns the code? Supreme Court indicates contract employees don't automatically give up copyrights. Page 7.

And the envelope, please... Using supercomputers to map medical viruses is the focus of final profile of *Computerworld* Smithsonian Awards nominees before next week's ceremony. Page 18.

High-tech gets word to China

Regime hasn't stopped information from West

BY PATRICIA KEEFE
CW STAFF

Some of those who sympathized with the bloodied student-led protest movement in China have tapped into the government-sanctioned technology revolution in a desperate effort to bolster s would-be people's revolution.

"This whole thing might have been buried had it not been for advanced technology," asserted Donald Klein, s professor of Asian politics at Tufts University.

New and old communications techniques — computer networks, telephones, modems and facsimile machines, along with word of mouth — have combined to convey information and news reports to the Chinese people about the People's Liberation Army's rampage against student demonstrators s week ago in Beijing's Tiananmen Square and subsequent events. Students have created s "fax revolution" by tirelessly faxing Western news reports of the attack throughout the East.

"This is one of the first examples of the effect of the networked world on a political situation," said Jessica P. Lipnack, president of The Networking Institute, Inc., s research and consulting company based in Newton, Mass., that specializes in the relationship between human networks and their technical counterparts. Both computer and human networks are being

Continued on page 6

CA alters Masterpiece script

BY ROBERT MORAN
CW STAFF

GARDEN CITY, N.Y. — Computer Associates International, Inc. surprised users of its Masterpiece financial software last week by announcing that a new database manager, based on the company's Datacom/DB relational database, will serve as the central repository for financial applications. .

In addition, the company said that users will be able to run personal computer modules with its new CA-Masterstation cooperative processing software programs, which comply with IBM's Common User Access. CUA is the portion of IBM's Systems Application Architecture designed to give software a common look and feel.

However, by usurping plans that were unveiled just a few weeks ago, the announcement caught users "flat-footed."

Two CA users expressed surprise last week, and while supportive of the company's direction, they said they were cautious about signing up for new products.

"I'm going to let somebody else be the guinea pig on the first one and wait until the software comes out perfectly," commented Jim Karney, manager of corporate management reporting at C-Tec Corp. in Wilkes-Barre, Pa.

Last week's announcement discards the Master Host Environment, a technology that was announced less than two months ago [CW, April 24].

MHE is a method that would isolate applications from system dependencies, allowing them to be written once. The applications are then moved to IBM mainframes and midrange computers as well as Digital Equipment Corp. processors.

In its place is technology based on the relational underpinnings of CA-Datacom/DB Re-

Continued on page 117

Database derby

• IBM repository seen as a late arrival. Page 117.
• Database bundling stirs up DEC market. Page 116.

Mac operating system plans fall shy of Apple's promises

BY DOUGLAS BARNEY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc.'s pledge last month to ship its next-generation Macintosh operating system in 1990 did not tell the whole story. Company officials acknowledged last week that they will not be able to deliver everything originally sketched out to users and developers.

While declining to specify what would be missing from System 7.0 of the Macintosh operating system, Apple Director of System Software Jim Davis said, "All of these things are up in the air. We expect 70% to 80% of what we announced to make it."

System 7.0 has been hailed widely by Mac enthusiasts as a breakthrough. The new operating system is expected to provide greatly improved memory management, multitasking and communications.

According to Charlie Oppenheimer, Apple's manager of system software product marketing, the so-called core features cited by Apple will ship with System 7.0. However, some components of these features may be missing from the initial version, Oppenheimer said.

Continued on page 4

MEDIA LAB

Can they invent the future at MIT?

BY GLENN RIFKIN
CW STAFF

The crowd of visitors snakes past the glass-enclosed room known as the Terminal Garden, stops en masse and stares inside at the jeans-clad students and researchers. Some snap pictures.

"What is this, s zoo?" an MIT Media Lab graduate student bellows at the visiting contingent.

He is seated at one of the many high-powered workstations that flower in the Terminal Garden. "Yeah, we're inventing the future here," he screams in mock agony. "Leave us alone so we can get on with it!"

Such is the price of fame. Since it officially opened in 1985 in its sparkling new I. M. Pei-designed building on MIT's Cambridge, Mass., campus, the Media Lab has gained international attention as the hot place to be in pursuit of the future of technology. A book entitled *The Media Lab: Inventing the Future at MIT* by industry pundit Stewart Brand cemented the Lab's reputation and left it imprinted with its own catchphrase.

SCOTT M. GOLDSMITH

One of the Lab's projects is a computerized piano accompanist

Despite the bright glare that reflects off its position at technology's leading edge, the Media Lab is not without its detractors. Questions have surfaced about the commercial viability of the Lab's work as well as the influence of Japanese industry in the sponsorship and funding of the entire

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NEWSPAPER

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"This whole thing might have been buried had it not been for advanced technology."

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Systems integrators are increasingly dropping in at the behest of top execs and line managers, not of IS. Page 63.

UPDATE

At dawn we slept — and made a bundle. Technology is rapidly sounding the death knell for fixed-location stock exchanges. More than 200 over-the-counter stocks next year will begin trading electronically in the predawn hours. The Chicago Mercantile Exchange has similar plans for trading commodity futures. Even the stodgy New York Exchange is feeling the 'byte' and may extend computerized trading after the floor boys shuffle home at 4 p.m. What would the world be without those crazy traders running all over exchange floors pumping orders? Better off.

Echlin's Gold sees boundless opportunities for downsizing. Page 69.

EXECUTIVE BRIEFING

■ **Don't burn all your mainframe bridges.** Downsizing of systems to run on PC and LAN platforms can work well, if approached realistically, but there is little chance that mainframes will become totally expendable anytime soon. Currently, most organizations find there are too many gaps in the technology to support more than a few well-chosen projects. Even in centralized organizations, there may be good reasons for downsizing some parts of the applications portfolio. The trick is figuring out which parts and how. One organization, frustrated by slow access, is considering calling its mainframe back into service as a database server. **Page 69.**

■ **It may be true** that end users are exercising more control over computer purchases, but research shows that in the end, IS still calls the shots. That is because even though users choose equipment and set priorities, it is the IS group that approves equipment purchases. **Page 45.** Speaking of acquisitions, many user firms still grasp the security blanket of dealing with an established vendor. That may be why even such a young established player as Compaq can charge almost $4,000 more than a lesser known vendor for a comparable high-end PC. **Page 47.**

■ **Signing on the dotted line** may mean a $100 million savings for Merrill Lynch. The financial services firm inked a five-year contract making MCI its exclusive communications carrier. Merrill Lynch expects to save $20 million per year in transport service costs. **Page 10.**

■ **The debate over whether independent contractors** such as free-lance programmers can retain the copyrights to their work reached the Supreme Court, which last week sided with the programmers. **Page 7.**

■ **IBM confirmed that the thermal conduction modules** in some of its newest 3090 mainframes failed and had to be replaced. But IBM officials last week disputed industry reports that the 3090 S models have experienced a much higher failure rate than preceding generations of mainframes. **Page 12.**

■ **Heinz climbed onto the outsourcing bandwagon** last week by signing a three-year, $15 million contract under which Genix will handle almost all of Heinz's U.S. mainframe processing. **Page 65.**

■ **You may think you're adding security** to your MVS operating system, but are you sure? IS may be unintentionally compromising the integrity — and the security — of MVS when it uses the system in conjunction with security products and then adds on other software that may not conform to IBM's integrity statement for the operating system. **Page 79.**

■ **Faced with competition from department stores,** hardware retail chain Ace Hardware is hammering away with information technology, ifcluding ties to its stores via the IBM Information Network. **Page 53.**

■ **IBM's MVS/ESA will pass the 50% level** in market penetration by winning commitments from managers of 3090 mainframe sites by the end of 1989, according to research. **Page 33.**

■ **IS organizations have been getting a better grip** on financial aspects of their activities by appointing IS controllers and managers with accounting experience. About 60% of IS organizations that have 100 or more employees already employ a dedicated financial controller. **Page 96.**

■ **Education about PCs can help top executives appreciate** the power and potential of the machines. On the other hand, an emphasis on features and functions may be appropriate if the objective is to teach top managers to use applications developed for them, such as an executive IS. **Page 111.**

■ **Practice paid off** for Penn Mutual Life Insurance, which kept damage to a minimum when a fire hit its data center only two weeks after a disaster-recovery drill. **Page 117.**

CA DATACOM/DB

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COMPUTER ASSOCIATES

PCs making their move into CAD/CAM market

BY WILLIAM BRANDEL
CW STAFF

The blistering pace of personal computer/workstation technology is overtaking minicomputers and mainframes in the engineering market.

In fact, performance boosts at the lowest sector of the hardware market have not only catapulted the number of PC computer-aided design, manufacturing and engineering (CAD/CAM/CAE) platforms past the number of Unix workstations and host-system platforms but also have locked up the computer-aided architectural design market.

PC vendors and users have their sights set on even bigger game, however.

The Intel Corp. processor performance improvements are growing more apparent as such PC vendors as Compaq Computer Corp. now pitch their systems in what was once the Unix workstation domain. In fact, Compaq, which made its mark trying to outperform and underbid IBM in the office environment, now claims that CAD systems account for 25% of its sales.

Although the fastest growth in the engineering market is still in technical workstations, analysts now find that 55% of the CAD/CAM/CAE platforms are based on Intel systems, which have locked up the the low end of the market.

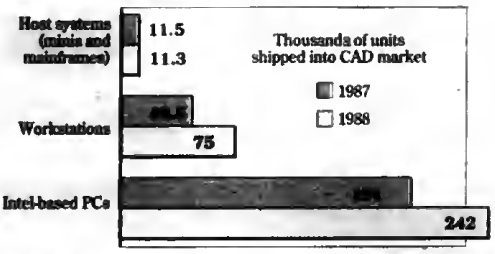
"We are moving toward using PC-based workstations for our engineering applications in a heavy way," said Russ Troy, CAD supervisor at Bechtel Western Power Co. in San Francisco, one of the largest technical engineering companies in the world. "It is a matter of efficiency. We are finding that with the new software we are developing, our engineers can do 90% of their work on a PC platform."

"The real battle for the CAD/CAM platform of choice over the next two years is definitely between PCs and workstations," said Lee Wylie, vice-president of computer-integrated manufacturing research at Gartner Group, Inc., a Stamford, Conn.-based market research firm. "And as PCs become more powerful," Wylie added, "they have a definite advantage in networking capabilities, data sharing and data management."

At Pfizer, Inc., "There's a lot faster growth ... in terms of sheer numbers because of the increasing functionality in the PC CAD applications during the last year," said Bill Mullin, vice-president of corporate information systems at the New York-based concern.

Plotting the CAD market

Host system shipments into the computer-aided design market declined from 1987 to 1988, while workstation and PC shipments increased



Faster, more powerful PCs, combined with vastly improved CAD/CAM/CAE applications and the onslaught of DOS extenders, are now seen as a low-cost alternative to costly Unix workstation software. DOS extenders, which run applications in protected mode, allow users to break the 640K-byte DOS barrier and access up to 4G bytes of memory, an essential ingredient in graphics-intensive CAD applications.

But the PC CAD invasion will not be all-encompassing, Mullin acknowledged. He said he believes that the heaviest hitters at Pfizer who have made themselves adept at Unix or other non-DOS operating systems will probably stick with what they are familiar with. In the long run, though, new users lacking a bias toward a particular environment will tend to use PCs for CAD because of the low cost and ease of use.

Micro explosion comes at a price

Ironically, as the cost of 32-bit reduced instruction set computing-based workstations declines, the price of CAD-based personal computers is rising sharply.

To put a CAD user on a Sun Microsystems, Inc. Sparcstation 1, with 8M bytes of memory, a 16-in. color monitor and a 100M-byte disk costs a company $14,495. The cost for a 25-MHz Compaq Deskpro/386, comparably configured with a graphics booster card, will cost $18,493. However, hardware cost is only one factor of the total CAD cost.

"Most engineers may know about Unix, but they already have a PC at home and know 75% of the DOS commands," said Celso Pabillare, CAD director at Davy/McKee Corp., an engineering and construction conglomerate based in Houston. "The first requirement before I hire an engineer is that they know DOS."

In addition to a familiarity with DOS, many engineers also have to perform non-CAD functions such as spreadsheets and word processing on their systems. "A PC running Autocad is a lot easier to use than a Unix workstation, and it does a pretty good job," said Dennis Kinsey, a project scheduler at Baltimore Gas and Electric Co. "I presently have no need for any more power than what this now gives me."

Another boon to PC CAD is that most CAD applications are developed for PCs, not Unix, according to Bruce Jenkins, an analyst at Daratech, a market research group in Cambridge, Mass. For this reason, Jenkins said DOS-based applications dominate the CAD market. "It is difficult for an application vendor to port applications to Unix because there is no one Unix binary standard," Jenkins said. "Meanwhile, one version of a DOS application will run on all DOS-based machines."

WILLIAM BRANDEL

Mac

FROM PAGE 1

Among the core features discussed were the following:

- Virtual memory, allowing a hard disk to provide random-access memory.
- 32-bit addressing, allowing access to 128M bytes of physical RAM and 4G bytes of virtual memory.
- Interapplication communications, allowing applications to share data dynamically.
- Database access, allowing seamless access to remote databases.
- A new Finder, allowing users to customize menus.

These are the exact features that developers said will restore Apple's role as a technology leader. However, none of five Macintosh developers interviewed knew what would fail to make the cut. "They are hedging on details about particular things," said Geoffrey Booty, vice-president of engineering at Layered, Inc.

One developer, who asked not to be identified, said that Apple had been unable to answer detailed questions about how certain features were to be implemented, which led to suspicions that much is unresolved. "It is hard to pin them down on anything," agreed Jeffrey Tarter, editor of "Softletter."

Apple officials admit that many details have not yet jelled but argue that all will become clear when they announce a final specification this fall.

As it stands, users and many developers simply need more information. "It creates a lot of indecision," said James B. Grinham, MIS manager at Tremco, Inc., who added that it may affect his firm's Macintosh buying plans. "I would not buy a car if I didn't know what the features were," he added.

Michael W. Onufer, data processing manager at Radio and Records, Inc., agreed. "If we couldn't get a definite answer, I would be frustrated," he said. "Our hands would be tied until after it was released."

Apple is clear on the fact that there will be no preemptive multitasking with System 7.0, at least not in the first go-round. In a graphically based system that already ties up the processor with screen handling, preemptive multitasking can slow performance dramatically.

However, this form of multitasking is essential for certain so-called mission-critical applications. "You can't do airline reservations or run a bank without it," said Mike Slade, group product manager for Microsoft Corp. Without preemptive multitasking, the Macintosh will remain a front-office machine, Slade said.

Drawn to the features broadly described in Apple documentation, many users are anxious for final details about the product. They believe the system could create whole new categories of applications that require communications, large memory and improved graphics.

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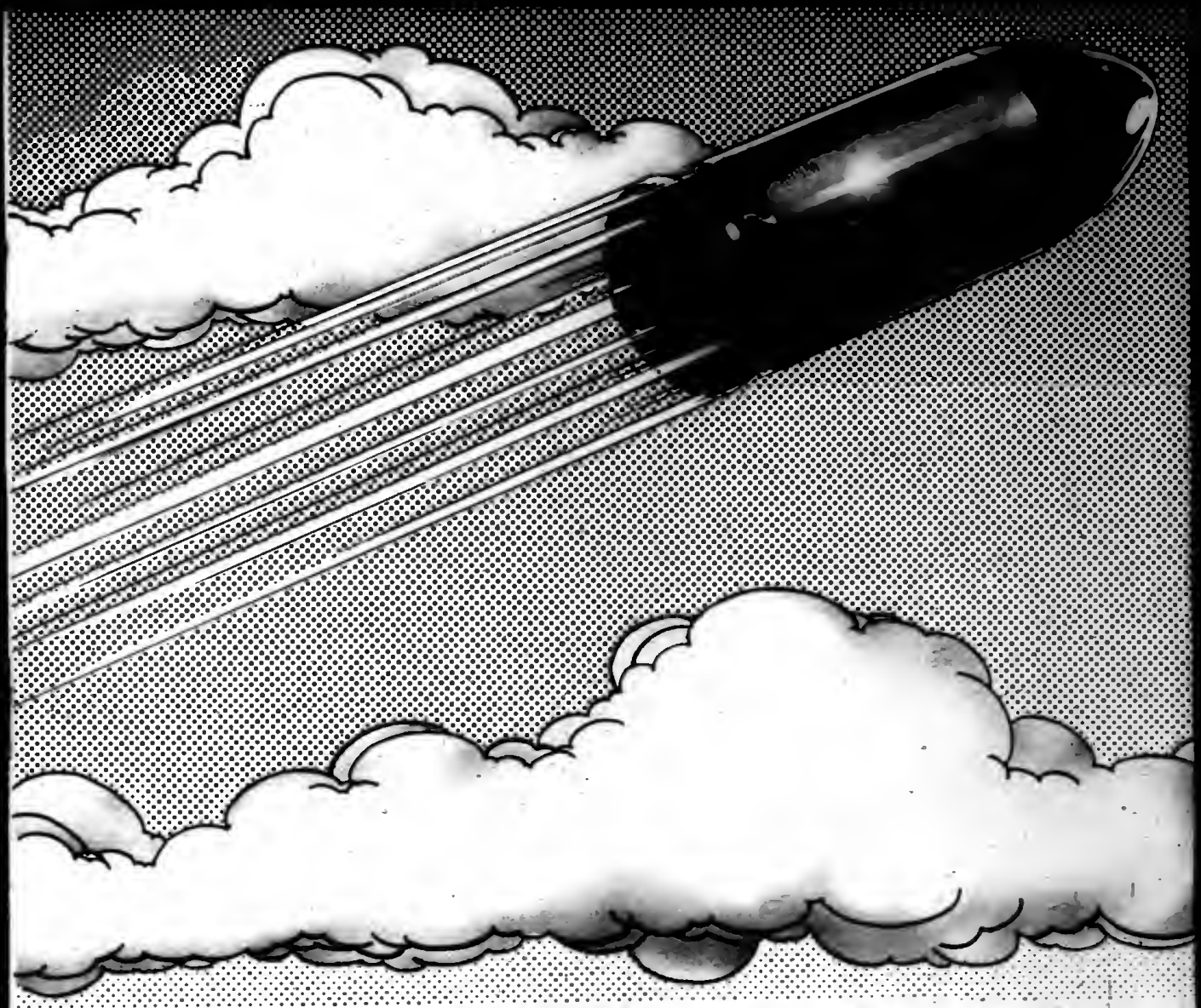

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China

FROM PAGE 1

used in China, one of the world's most skilled nations at working in groups, she said.

The Chinese government — torn between the need for economic support from foreign investors and an apparent desire to avoid airing its dirty laundry — has served as an unwitting accomplice to pro-democracy efforts both by being an eager importer of Western technology and by deciding not to disrupt international phone service, observers agreed.

The Chinese government was beginning to clamp down on telecommunications late last week, according to Melvyn Bennett of *Computerworld Hong Kong*.

"When people do get through, the first thing said by the person in China is, 'There is a security guard, policeman or soldier by my side,' " Bennett reported. "It is getting hard to say anything at all, as sometimes the lines are cut," he added.

The students' familiarity with Western technology and its economic benefits may have fed some of the frustration expressed in the Tiananmen Square demonstrations, said Denis Simon, a specialist on the impact of technology on political science at Tufts' Fletcher School of Law and Diplomacy. Computers and advanced sciences "have helped to produce a lot of inequity of opportunity and benefits in China," Simon said.

Unlike the Soviet Union, which has created party-sanctioned technocrats, China's leaders have long wrestled with the issue of how to bring in Western science and technology without the accompanying political changes, Simon continued. "There's even a phrase for this dilemma — *ti-yong*, which means 'Western technology in Chinese culture.' "

But in the end, technology — in the form of voice and data transmission working hand-in-hand with copiers on the mainland — has come back to haunt the government, serving as the main weapon for combating the Communist Party propaganda machines, U.S.-based Chinese students and China scholars said in interviews last week.

Missing links

Most Chinese, even those close to Beijing, do not know the full extent of the violence believed to have occurred, nor are they aware of the power struggles going on in the government and military. Ruiming Xu, a doctoral candidate at Brandeis University in Waltham, Mass., told of this example: "Based on what she read in the official press, one student in Shanghai who lives in Beijing thought that city would be quiet," only to return home and find the capital in chaos. "It's rare that people in China know what's going on," said Ruiming, who has been busy faxing news reports in between defending his dissertation.

The government's decision to cut Beijing off from the rest of country has exacerbated this situation. Officals cut internal long-distance lines to the city and early last week pulled the plug on satellite dishes used to transmit video images to the West. Western television news operations had to resort to shipping out videotape to nearby countries, or even transmitting still shots from video via phone lines (see story below). Hence, the critical role played by the fax revolution. "What the media and technology have done is to make it much more difficult to cover up. . . the real truth," Tufts' Simon said.

The technology-backed information assault has taken several forms, chief among them the lowly fax. "Never did the government think when they allowed these machines to come into [work units] that faxes would be used for dissemination of news," Lipnack said.

Saiman Hui, managing director of International Data Corp.'s mainland China affiliate, told *Computerworld Hong Kong* Friday that there are about 10,000 fax users in China. "Fax machines are easy to purchase, but it is very difficult to obtain a [phone] line for them," he said. *Computerworld Hong Kong's* Bennett said it appears the government has now attempted to place a guard near every fax.

Students have been furiously faxing Western news reports and photos to government and privately owned fax machines in China, as well as to international businesses there. In the scramble to find these telephone numbers, some supporters made appeals on local radio stations. "AT&T has provided us with a list of fax numbers for all Massachusetts businesses that have interests in China," said Judith Humphries, an Interlibrary Loan coordinator at Brandeis.

The students readily acknowledge that in some cases, they have no idea who is on the receiving end of their faxes. They have been told by sources who declined to give his name, are radio broadcasts from the British Broadcast Corp. and the Voice of America (VOA).

Not that it has been easy. The

WIDE WORLD PHOTOS

Technology *helped spread word of events at Tiananmen Square*

in China, however, that what does get through is both faxed to other Chinese cities and copied for clandestine distribution.

This provides only a partial solution. International calling capability and fax machines are primarily confined to the major cities, where an estimated 200 million Chinese live, said Dr. Chong-Pin Lin, associate director of the China Studies Program at the American Enterprise Institute in Washington, D.C.

The vast majority of the 1.1 billion population resides in rural areas barely served by an antiquated phone system.

More effective than faxing in this case, said a Chinese exchange student in Los Angeles VOA has relied on short-wave transmission into China, said U.S. Information Agency spokesman William Eames. Some of the initial broadcasts over about 10 frequencies were jammed by the Chinese government.

The VOA has implemented a temporary strategy that consists of taping radio broadcasts, sending them out over the U.S. Information Agency's satellite network [CW, April 24] and bouncing them off an estimated 2,000 receive-only satellite dishes throughout China. Since most of these are under army control, Eames concedes he does not know whether the broadcasts are falling on deaf ears.

U.S. industry anxious to remain

BY HELEN PIKE
CW STAFF

It appears unlikely that U.S. computer companies will abandon their investments — already in place or planned — in China, despite that country's ongoing political turmoil.

"We can't depend on the U.S. market alone," said Chi Ning Liu, who set up Hewlett-Packard Co.'s joint venture with the China Electronics Import and Export Corp. in 1985. The $10 million partnership manufactures HP 3000s from kits and analytical products; it employs a 320-member staff, of which 250 are Chinese. All U.S. nationals who work for HP or other U.S. companies have been evacuated.

David Wu, a securities analyst at S. G. Warburg & Co. in New York, said China is "a simple and fragile beginning" for U.S. high-tech companies that have already established themselves. Whatever the political outcome, they will be able to pick up where they left off, he predicted.

Among those negotiating partnerships for U.S. companies with China is James Gallatin, an international trade lawyer at Gaston & Snow in Washington, D.C. "China is important as an investment. If you're the first in, you will be remembered and become the standard," he said.

"China can't afford to re-isolate itself," despite its internal political strife, said Gerry Gleason, vice-president of The Foxboro Co., a process instruments and controls maker in Foxboro, Mass. It "has a great need for industrialization."

As far as AT&T is concerned, six million telephones for one billion people represents a tremendous potential, said Rick Wallerstein, a company spokesman. "We don't want to make long-term decisions based on day-to-day events," he added. Since 1985, AT&T has launched three joint ventures in China. IBM would not reveal the number of U.S. employees it had in China or the extent of its presence, but the company did say that it has sales and service offices in Beijing and Shanghai and that it has sold some Personal System/2s there.

Through the bamboo curtain

The high-tech weapons used by news organizations and students to transmit information in and out of China cover a wide area:

- Links to the West installed a year or two ago — to provide direct international dial-up — are a critical supplement to China's antiquated telephone system. Citizens seeking to place calls into or out of Beijing find it easier to call U.S. relatives, who in turn are relaying the messages to other parts of China, according to Chong-Pin. Most news correspondents are using cellular phones to call in their stories.
- Stymied by the loss of satellite transmission required to transmit video images, ABC's television show *Nightline* opted to transmit selected still frames of videotape using a $40,000 Sony Corp. Promavica Series, which includes a still video camera and recorder/player. The film is fed into this portable system, which contains a floppy disk and some intelligence. It digitizes the image and transmits it over leased lines and satellite to a receiving box in New York, which reverses the process. It takes approximately 90 seconds to transmit a single frame.
- Copiers are widespread in China, and students use them to crank out newsletters and copies of photographs and external news reports.
- Networked electronic mail systems, such as Bitnet, Usenet, Compuserve, The Source and other Western public messaging systems, are flooded with messages and rumors about China. One Chinese mailbox is rumored to be accessible through a West German link.
- Networked databases. At least one of these has been established by students at the University of California at Berkeley in an effort to provide an electronic clearinghouse for news about events in China. Access is said to be open to anyone attached to Internet with a Unix log-on.

PATRICIA KEEFE

CORRECTIONS

An article on software escrow agreements [CW, May 29] incorrectly stated that Computer Associates International, Inc. had dropped support of a mainframe scheduling package acquired from Uccel Corp. CA reinstated support when it acquired the product from Uccel, which had previously discontinued support.

The correct suggested retail price for Claris Corp.'s Claris CAD [Apple gains in CAD credibility, CW, May 15] is $799.

High court preserves free-lance copyrights

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. Supreme Court decided last week that independent contractors such as free-lance computer programmers may retain the copyright on their creative works.

In essence, the court's unanimous ruling means that independent contractors can hold the copyright for programs and manuals they write under commission, unless those rights are assigned to the employer in a contract.

The Computer and Business Equipment Manufacturers Association (CBEMA) opposed the ruling — which it considered to be a radical departure from the prevailing industry practice — in which the employer exclusively holds the copyright on works commissioned from independent contractors.

However, companies can work around the problem by requiring contractors to assign the copyright to the employer in the contract, said Ronald J. Palenski, general counsel for Adapso, the software and services industry association. "Contract negotiations will be a bit more prolonged and complicated," Palenski acknowledged, "because there will be more negotiation about [copyright] ownership."

CBEMA agreed that the ruling will result in more complicated contracts and argued that this ruling will stifle the industry's use of independent programmers. However, other sources said the industry will continue to use contractors because of the high cost of employee benefits and shortage of skilled programmers.

Esther Roditti Schachter, a computer-law expert in New York, said the decision is very complex and may cause some temporary confusion, but companies will continue to use independent contractors for economic reasons, she added.

In a court brief, CBEMA and the Information Industry Association denounced "the fragmentation of ownership and control of copyrights." When independents contribute part of a software package, such as screen displays, the contractors will claim they deserve co-ownership of the copyright, the groups predicted.

CBEMA said a major problem with co-ownership is the difficulty and cost of granting exclusive licenses, because that requires the consent of co-owners.

The Supreme Court's decision sought to clarify the work-for-hire doctrine of the Copyright Act of 1976, which hands the copyright of employees' work to the employer. The law did not clearly state whether independent contractors and commissioned artists were employees.

Ruling in the case of *Community for Creative Non-Violence* v. *Reid*, the court said the nonprofit group could not retain exclusive copyright for a sculpture it commissioned from artist James E. Reid, because Reid was a free-lancer and not a conventional employee.

"Transforming a commissioned work into a work by an employee on the basis of the hiring party's . . . control of the work is inconsistent with the language, structure and legislative history of the work-for-hire provisions," wrote Justice Thurgood Marshall in the 9-0 decision.

ISDN-o-matic PCs promised

BY ELISABETH HORWITT
CW STAFF

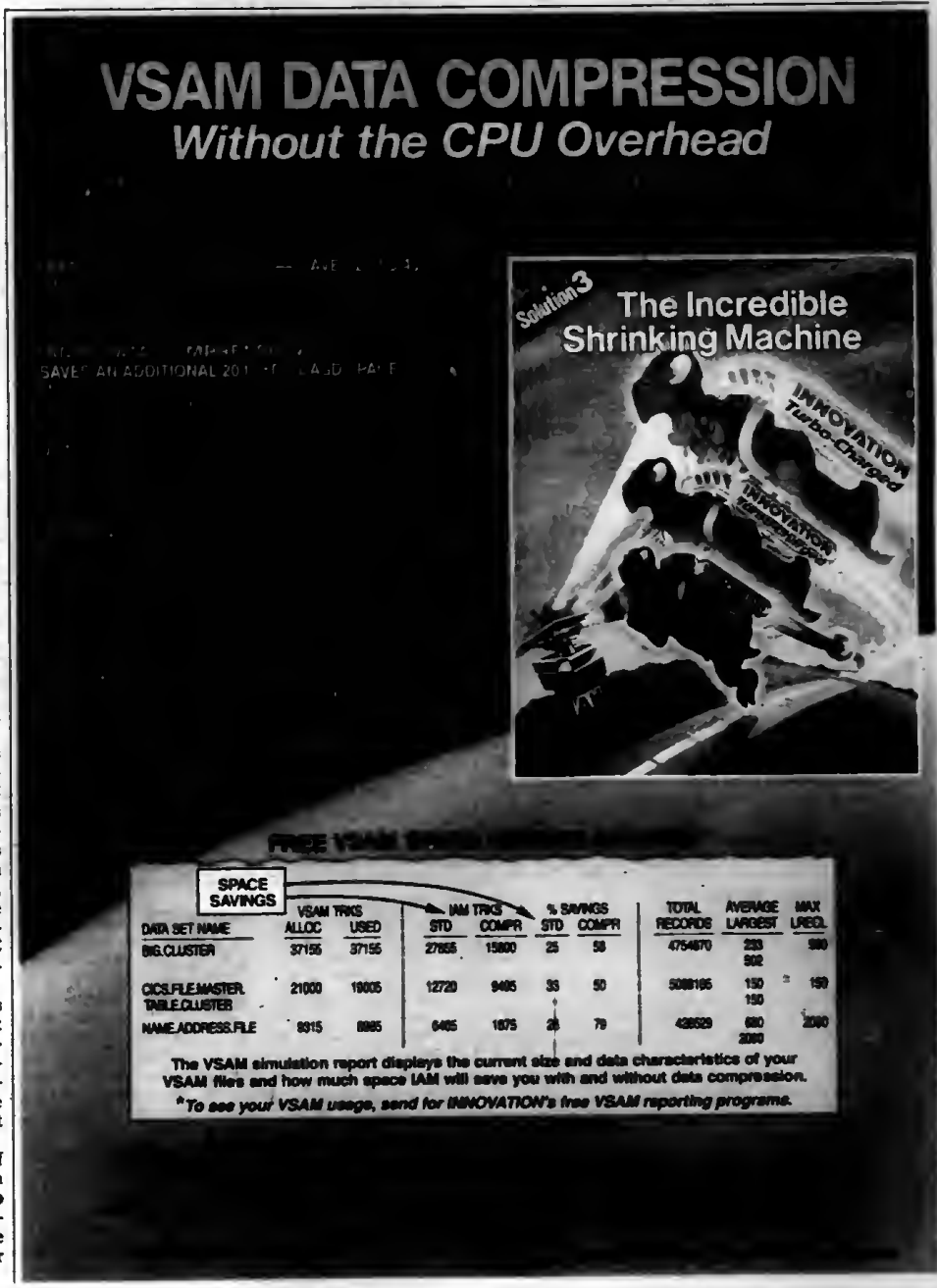
RICHARDSON, Texas — Vadis, Inc., a small offshoot of Compaq Computer Corp.'s now-defunct Telecompaq division, is planning in two weeks to announce and ship a product that is said to automate IBM Personal Computer communications over Integrated Services Digital Network (ISDN) communications links.

The introduction will include a communications board, based on an old Telecompaq product, that allows the personal computer to communicate over an ISDN network at rates of 9.6K or 19.2K bit/sec., according to Vadis President Max Jenson.

A number of vendors, including Teleos Communications, Inc. and Hayes Microcomputer Products, Inc., sell ISDN PC boards. However, Vadis will package its board with software designed to automate communications functions such as messaging, IBM 3270 terminal emulation and file transfer over an ISDN network, Jenson said. The product will also provide screen-sharing, but in a limited, low-speed fashion, similar to existing IBM PC applications such as Meridian Technology, Inc.'s Carbon Copy, one source said.

Shearson Lehman Hutton, Inc. plans to let its users decide whether they want to use Vadis' offering to tie their workstations into a planned ISDN network, according to Assistant Vice-President David Isherwood. "All we've seen [of the Vadis product] so far is a glossy; we want to see the specifications."

The product takes advantage of ISDN's ability to connect any user in an organization by providing easy access to resources and users, regardless of location, Jenson said. "ISDN could replace LANs for the casual user; its beauty over LANs is that distance is not a problem."



NEWS SHORTS

Unix users take the dais

When it comes to Unix, the end-user community has often taken a backseat to vendor politics. This week, however, end users from major companies will get a chance to speak their minds, while Unix vendors lend an ear. X/Open is holding a forum in Montreal for users to air concerns about Unix and standards. The result will be "Prospectus of Market Demand."

DEC-Apollo details due

Digital Equipment Corp. and Hewlett-Packard Co.'s Apollo division plan to release tomorrow further details about their effort to extend the capabilities and network independence of the remote procedure call (RPC) component of Apollo's Network Computing System (NCS). Both vendors reportedly plan to make the extended RPC part of their own operating system environments in the next year. HP will officially give its blessing to the effort and confirm its own plans for making NCS part of its distributed architecture.

IBM spots emissions rule loophole

IBM recently urged the Federal Communications Commission to close a regulatory loophole that could allow user-assembled personal computers to produce disruptive emissions. FCC emissions rules cover assembled PCs but fail to require emissions testing and certification of user-installed motherboards. The upgrade boards can dramatically increase emissions, IBM explained.

Orient Express to 2000 A.D.

Japanese companies will dominate the supercomputer market in the next century, according to a survey taken last week of 300 computer company executives and analysts. The survey was sponsored by Technologic Partners and Merrill Lynch & Co. The majority also thought that the U.S. would be unable to penetrate the Japanese market with high-tech products.

BIT boasts 65-MIPS chip

Bipolar Integrated Technology announced last week that it has produced a microprocessor capable of performing more than 65 million instructions per second. Called Bit Sparc, the 32-bit chip uses the reduced instruction set computing architecture introduced by Sun Microsystems, Inc. last year. It also attains up to 40 million floating-point operations per second, officials at the Beaverton, Ore.-based firm said.

New Wren lands in market

Imprimis Technology, Inc. last week delivered what it calls the first 5¼-in. hard-disk drive able to hold a gigabyte of data. The Wren VII 1.2 drives, announced last October, are being shipped in evaluation quantities. Volume production is scheduled for September, according to Imprimis, a Control Data Corp. subsidiary. The drive follows a 760M-byte 5¼-in. drive product and uses "patented zone bit-recording techniques."

IZE garners prize

Persoft, Inc. recently won the Software Publisher's Association's Best New Business Use of a Computer for 1988 award for IZE, its text-based information package for IBM Personal Computers and compatibles. IZE creates, organizes and retrieves large volumes of information and dynamically creates outlines. It can import ASCII files and be linked to MS-DOS applications such as word processors or spreadsheets.

AT&T targets RPG users

In the hope of winning over users from IBM's huge installed base of System/34 and System/36 users, AT&T has extended its RPG II environment to support AT&T 6386 WGS systems. Last year, AT&T announced that the RPG II environment will support its 3B2 departmental systems. The environment is said to enable customers to run applications written in RPG II on AT&T systems.

Sit-down only feeds Prime, MAI friction

BY NELL MARGOLIS
CW STAFF

After seven months of bitter battle, unwilling takeover target Prime Computer, Inc. and relentless potential buyer MAI Basic Four, Inc. last week went to the bargaining table. However, the mini-summit between Prime's executive committee, MAI Chairman Bennett LeBow and LeBow's investment partner, William Weksel, yielded only an agreement to disagree; hours later, the parties had resumed their continuing press release war with renewed vigor.

The morning after the unsuccessful summit, LeBow made a public announcement that Prime's directors "evidenced no interest in negotiating a business combination of Prime and MAI" at this time and on MAI's terms and accused Prime's board of directors of failing to act in the shareholders' best interest by continuing to stonewall "the only bidder for Prime."

Neither contention would be expected to be considered earth-shattering by Prime because the announcements represented the status quo of the past few weeks. Nevertheless, Prime followed MAI to the wire within hours with a retaliatory statement in which Prime's executive committee declared itself "shocked and totally surprised at the intentionally misleading news release MAI issued this morning regarding the meeting."

Wall Street analysts who have been following the Prime/MAI affair since its November 1988 inception professed neither shock nor surprise. They did express a desire not to engage in any further speculation on the outcome of a corporate struggle that they see as having taken on an unpredictable plot line and dramatic quality of a soap opera.

After a week of accusations, the question regarding Prime's future ownership was no closer to resolution. The date for Prime's annual stockholders' meeting, however, is expected to be settled after a hearing set for this afternoon.

Early last week, Prime shifted the meeting from its scheduled June 14 date to July 26, an action that MAI said it views as an attempt to ward off a proxy fight that was scheduled to take place. Prime stated that in light of MAI's "last-minute substantial revision" of the terms of its long-standing takeover offer [CW, June 5] announced June 1, the mid-June meeting date denied Prime sufficient time to explore all financial alternatives.

MAI's response was swift. Filing suit in the Delaware Chancery Court to compel Prime to go through with the June 14 meeting, the militantly not-ready-for-Prime-time player tagged the postponement — Prime's second with regard to this year's annual meeting — as a ploy to scuttle MAI's bid.

"All of the financing and planning for our pending cash tender offer ... has been based on a June 14 meeting date," said an MAI spokesman. A postponement, he claimed, would work to "preclude a closing prior to the July 31 expiration of our financial commitments."

Exchange probes Sun stock tumble

BY JAMES DALY
CW STAFF

Officials at several regulatory agencies confirmed last week that they are looking into the heavy trading volume and price drop of Sun Microsystems, Inc.'s common stock in the hours before the workstation maker announced that its upcoming quarterly financials would be lower than expected.

Sleuths at the National Association of Securities Dealers, Inc. and the Pacific Stock Exchange have launched preliminary inquiries, which begin whenever an excessively high daily trading volume cannot be linked to an easily explainable market force, such as a chairman resigning or the release of an unfavorable research report.

After the stock market closed June 1, Sun President Scott McNealy revealed that net income for the fiscal fourth quarter ending June 30 "could fall below" the $497 million reported in the third quarter. The Mountain View, Calif.-based firm could even experience a slight loss, McNealy said.

However, in the hours before that announcement, 3.3 million shares of Sun's stock traded, much higher than the daily average of 800,000 shares.

Observers also point out that Sun's stock fell $1.25 per share that day in what was an up market. This would seem to indicate "that someone knew and acted on" the news in advance, said Robert Herwick, an analyst at Hambrecht & Quist, Inc.

U.S. virus-combat centers studied

BY MICHAEL ALEXANDER
CW STAFF

GAITHERSBURG, Md. — The onslaught of computer viruses and other attacks by hackers on the nation's computer networks have prompted the National Institute of Standards and Technology (NIST) to look into computer security response centers.

The purpose of the centers is to assist government agencies in preventing, detecting and responding to computer viruses and other disruptions of computer systems and networks, said Dennis Steinauer, manager of the computer security management and evaluation group at NIST's National Computer Systems Laboratory.

The proposed network of response centers will be modeled after one established last November by the Defense Advanced Research Projects Agency (DARPA), Steinauer said. DARPA set up its Computer Emergency Response Team (CERT) to respond to security breaches on Arpanet and Internet networks following a series of attacks by hackers.

Each of NIST's centers will serve a specific community of users or technology, Steinauer said.

"The important thing to remember is that these sorts of things [hacker attacks] tend to occur in homogeneous environments, among users with common applications like Internet or common technologies like Unix," he explained.

DARPA CERT, which already serves government and university users of Internet and Unix, cannot also support government users of Digital Equipment Corp. VMS, IBM MVS and other operating systems, Steinauer said. "CERT can't hope to concentrate their expertise on all of the different constituencies in the federal government."

NIST will not serve a specific constituency but will act as the command post to facilitate communications among the various centers, Steinauer added.

NIST will host a by-invitation-only workshop in Philadelphia July 31 and Aug. 1 to discuss how to set up and operate the response centers. The workshop is being held in conjunction with the Software Engineering Institute.

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	San Francisco	July 25 August 24
	Santa Clara	July 13/m August 17/b
	Universal City	July 6/
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FL	Ft. Lauderdale	July 14b
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MO	Kansas City	August 3/b
	St. Louis	July 11/b August 8/m
NC	Res Tri Park	July 26b
NE	Omaha	July 6g
NJ	Asbury Park	August 8g
	Iselin	July 20/ July 22/
NM	Albuquerque	July 20g
NY	Albany	July 11/
	East Syracuse	August 10b
	Melville	July 19/ August 16a
	New York City	July 12/ July 26 August 9/ August 23g
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TX	Austin	July 28b
	Dallas	July 11/b August 1gu
	Ft. Worth	July 18o
	Houston	July 13/bo August 17/b
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	Richmond	July 27/
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WI	Madison	August 17/
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- *a* Macintosh Networking
- *f* Oracle Financials
- *h* CASE/Application Tools
- *i* Oracle Mail
- *m* Computer Integrated Manufacturing
- *o* On-line Transaction Processing
- *p* PC Product Solutions
- *u* Unix

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1 IBM Journal of SAA 2 DATAPRO survey, August 1988, companies with sales over $10 million 3 Donaldson, Lufkin & Jenrette report

Merrill Lynch to lop hunk off telecom costs

BY ROBERT MORAN
CW STAFF

NEW YORK — Merrill Lynch & Co. moved last week to shave an estimated $100 million off its telecommunications bill during the next five years by awarding an exclusive transport services contract to MCI Communications Corp.

Although the company's private network will get smaller, Merrill Lynch has not turned its telecommunications responsibilities over to MCI for a turnkey solution — at least not yet.

The company is still cautiously evaluating whether it will turn over network management responsibility to MCI or any other vendor. That is a decision that, according to Bruce Turkstra, senior vice-president of operations systems, telecommunications, the company plans to make next month. "Right now, we have the major savings booked, which is on the transport side," he said.

With the five-year contract, estimated to be worth more than $150 million, Merrill Lynch will be able to trim many service costs by as much as 50%, said Robert Niebanck, first vice-president of telecommunications. The contract is reportedly the largest MCI has won.

MCI has been supplying between 20% and 30% of Merrill Lynch's transport services and under the contract will provide about 98%. Turkstra estimated that the contract will trim the company's approximately $70 million per year transport costs by about $20 million per year.

"MCI had more flexibility and more willingness to adapt to our particular requirements," Turkstra said, explaining why MCI won the award.

An AT&T spokesman said the company felt it had a competitive offering and was disappointed that it was not selected.

Merrill Lynch's private-line backbone will remain at the center of the network and will be integrated with an MCI backbone. Merrill Lynch will maintain design and engineering, network management and facilities management responsibilities.

"We will maintain almost all of the operations," Turkstra said. "This is the transport piece. The agreement sounds more global than it is."

Whether or not Merrill Lynch assigns network management to MCI or any other third party, the agreement will alter portions of network management.

For example, MCI will carry international voice and data traffic to Merrill Lynch's gateway cities, which are the same as MCI's — London, Tokyo, Berne, Sidney and Toronto.

Not a factor

According to Turkstra, Integrated Services Digital Network was not a factor in the analysis. "We use ISDN-capable switches in the home office, but we are not a big ISDN user and are not getting into it," he said.

Whichever party gets the network management contract, its responsibilities will include configuration and change management, daily modification of the network and development of appropriate network management tools.

If the company turns over network responsibilities, it will result in cuts to Merrill Lynch's networking staff, Turkstra said.

Turkstra said MCI is teaming up with Electronic Data Systems Corp. in a bid for the network management business. "EDS augmented MCI's offering nicely," Turkstra said. "By themselves, I don't think MCI felt comfortable in their ability to supply all the service we required in network management." An EDS spokesman said the company would not comment on its relationship with MCI.

Other vendors may still get involved, Turkstra said. "We want to rethink the whole thing, basically," he said.

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IBM touts costly subsystem as a vital OSI linkup

NEW YORK — IBM executives told analysts last week that Netview users who want to manage Open Systems Interconnect (OSI) devices will have to buy the vendor's OSI Communications Subsystem, announced last September.

Thomas Nolle, president of Haddonfield, N.J., research firm CIMI Corp., said IBM indicated the subsystem is the only OSI solution available for the next two years. The advantage of the subsystem is that it does not require Netview/PC; the disadvantage is that it is priced at around $300,000, he said.

Further, IBM claimed that it would deliver support for the OSI Common Management Information Protocol next year, Nolle said. IBM also said that the Advanced Peer-to-Peer Networking "idea of a self-defining network will migrate to an SNA Network Control Program environment." This promotes the idea of a peer-to-peer network in which nodes can address one another's resources directly, without having to go through the host to find out where those resources are, as in a traditional SNA network.

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No straight story on reputed 3090 S model logic failures

BY ROSEMARY HAMILTON
CW STAFF

IBM confirmed last week that a small number of 3090 S models have had failures but denied that a widespread reliability problem exists, as some industry observers have suggested.

Two users contacted by *Computerworld* last week said they had early failures with the system's thermal conduction modules (TCM), which house the logic chips in 3090s. However, the users said, no subsequent failures have been experienced since IBM replaced those earlier TCMs. Several other users contacted reported problem-free S upgrades.

"We've been hearing about it, but we've not really seen it," said Jack Cooper, president of CSX Technology, the technology arm of CSX Corp. "In the first week, we had one failure, and that was it."

CSX, which currently has four S models installed, took the first IBM 3090 S model shipment last fall. That system, a 3090 600S, had the failed TCM. Another 600S was installed Memorial Day weekend, and Cooper said there have been no problems with it.

Rumors heated up last week that IBM had yet another big S model problem on its hands. Several users reported hearing such reports. International Data Corp. analyst Dave Vellante said based on his contacts with users, he believed the problem is more than a typical failure rate. IDC plans to issue a report on the issue soon.

Frank Gens, an analyst with IDC's Financial Services Corp., said he recently was told by IBM that the S model TCM issue was resolved. Shortly after that conversation, however, a client called to report an S model TCM failure, Gens said. "It's hard to determine where the truth lies," Gens said.

Earlier this year, IBM went public with a chip problem it was having with S model production and said the problem had been fixed. At that time, it also said the chip problem would cause S model shipment delays. "The 3090 doesn't have any kind of reliability problem," an IBM spokesman said last week. "It has met our rigorous requirements for design. While a small number may have experienced outages, it's not uncommon in the changeover to a new technology."

Last week, Gartner Group, Inc. said IBM had a higher than normal TCM failure rate with S models delivered before March. James Cassell, a vice-president at the Stamford, Conn.-based research firm, said systems shipped before that time were failing at a rate of 3% to 5%, which he characterized as above average for a new generation of systems. He said IBM had corrected the TCM problem, which he tied directly to the earlier chip problem, and said TCMs in systems shipping since March have been failing at a rate of about 1% to 2%. He estimated that 300 systems have been installed to date. "It hasn't been out of line with prior generations — since March," Cassell said.

The IBM spokesman said the company would neither confirm nor deny Gartner's estimates.

Cassell said the initial S model chip production hit a snag because the new chips packed more circuitry on them than the previous E model chips. Put simply, IBM had a very different chip to handle, with some 2,300 circuits per chip, as opposed to the approximately 600 circuits in the E model chips. Some of the chips that passed IBM's tests ended up failing later at customer sites, apparently when exposed to very high temperatures, he said.

IBM beefed up its internal testing when the problem first surfaced, which initially produced lower yields of good chips, Cassell said. That, in turn, resulted in shipment delays.

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MCDONNELL DOUGLAS

IBM cleans up PS/2 disk glitch

IBM said last week that it has discovered defects that cause the 120M-byte disk drive to freeze in its Personal System/2 Model 70 and is offering free replacement of the disks at customer sites.

An IBM spokesman said the IBM-made drives in the Model 70-121 and -A21 occasionally failed to start in almost 15% of the Model 70s that were shipped. The IBM spokesman said that after internal testing, the firm believes the data on the disk remains intact and can be recovered once the drive is restarted. He added that the disk will start by turning the system off and then on again. The problem is more likely to occur in the Model 70-121, which has a serial number below 72-9027617, and Model 70-A21, which has a serial number below 72-6000679.

IBM also acknowledged that there is still a shortage of PS/2 Model 80s that is believed to have been caused by manufacturing line problems. The shortage, which was noticed in March, was expected to be corrected more than a month ago. The spokesman said IBM will be caught up with its Model 80 back orders by the end of this month.

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AZ	Phoenix	July 11
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CA	La Jolla	August 17d
	Los Angeles	July 20f/m August 16m
	Newport Beach	July 18d August 10a
	Ontario	July 27f
	Sacramento	July 19d
	San Diego	July 13f
	San Francisco	July 25 August 24
	Santa Clara	July 13f/m August 17f/p
	Universal City	July 6f
CO	Colorado Springs	August 24 / Aug 24g
	Denver	July 20 August 22gk
CT	Farmington	August 3f
DC	Washington	July 13gh August 17g
FL	Ft Lauderdale	July 14k
	Jacksonville	August 9f
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	Orlando	July 12f
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	Savannah	August 10d
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IL	Chicago	July 19f/m August 23f/k
	Springfield	July 11
IN	Ft Wayne	July 12
	Indianapolis	July 18d August 29f
KS	Wichita	August 15
KY	Lexington	July 18
LA	Baton Rouge	August 24m
	New Orleans	July 27f
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	Burlington	July 12a August 10g
MD	Baltimore	July 18f
ME	Portland	July 19
MI	Dearborn	July 11dm
	Grand Rapids	July 13m
	Lansing	August 10f
	Troy	August 8dm
MN	Minneapolis	July 12d August 9a/
MO	Kansas City	August 3/k
	St Louis	July 11/k August 8/m
NC	Res Tri Park	July 26k
NE	Omaha	July 6g
NJ	Asbury Park	August 8g
	Iselin	July 20f July 22f
NM	Albuquerque	July 27g
NY	Albany	July 11f
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	Melville	July 19f August 16a
	New York City	July 12f July 26 August 9f August 23p
	Rochester	August 24f
OH	Akron	August 24f
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	Cleveland	July 26p
	Columbus	July 5 August 19f
OK	Oklahoma City	August 2/6
OR	Tigard	August 22
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	King of Prussia	August 19f
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RI	Providence	July 11
SC	Charleston	July 20d
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	Dallas	July 11/k August 1pa
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	Houston	July 13/pa August 17/k
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Vendors scramble to push imaging market

BY JEAN S. BOZMAN
CW STAFF

SAN FRANCISCO — In an effort to spur sales, leading vendors in the infant image-storage-and-retrieval marketplace last week declared their intent to don the hats of consultants and show users the way to integrate the technology.

At the Association of Information and Image Management show here last week, Wang Laboratories, Inc., IBM and Eastman Kodak Co. each said they were prepared to pull together the hardware and software that will add images to existing computer applications.

Wang took the most dramatic step, unshackling its imaging software from its proprietary and less-than-booming minicomputer line. Wang announced its Wang Integrated Image Systems (WIIS) product line in 1987, but executives last week said the company had so far sold only 250 VS minicomputers for WIIS. Currently, the $3.1 billion company receives 5% of its revenue from image-based applications but expects imaging technology to grow to 10% of sales by the early 1990s. Some analysts have predicted the market will grow to $1.2 billion by 1992.

Wang said last week it is offering a new software platform that will extend image applications beyond the Wang VS minicomputer platform. Called Open/Image, the new software architecture will allow independent software houses to write Wang-compatible image applications for standard IBM PC-DOS machines and industry-standard personal computer local-area networks.

At the same time, Wang announced alliances with Oracle Corp. in Belmont, Calif., Gupta Technologies, Inc. in Menlo Park, Calif., and New York-based Information Builders, Inc. Gupta's software, for example, would allow real-estate managers to insert pictures of homes for sale on description documents stored in PCs.

The three vendors are among nine that have agreed to develop WIIS applications for PC-DOS computers. The new software will support LANs made by Novell, Inc., Banyan Systems, Inc., IBM and 3Com Corp.

"Open/Image architecture can be used across the broad range of hardware platforms that exist across the organization today," Wang President Frederick A. Wang stated. "The concept is to integrate the management of images with data processing, word processing and networking. Images should be an extension to the applications already running" on those platforms.

Kodak, which owns several imaging technology companies, announced a similar strategy for users of major computer environments, including those from IBM, Digital Equipment Corp. and Hewlett-Packard Co. Kodak's Imagelink platform will support multiple software and communications standards, according to Ed Greco, general manager of Kodak's Business Imaging Systems Division.

But Kodak's solution, like Wang's, will require a great deal of up-front analysis of the customer's existing computer environment. Kodak, which is relatively new to the systems business, admits that it has to provide a measure of consulting expertise. It is also offering new hardware, including an Imagelink scanner and a device that digitizes images stored on microfilm.

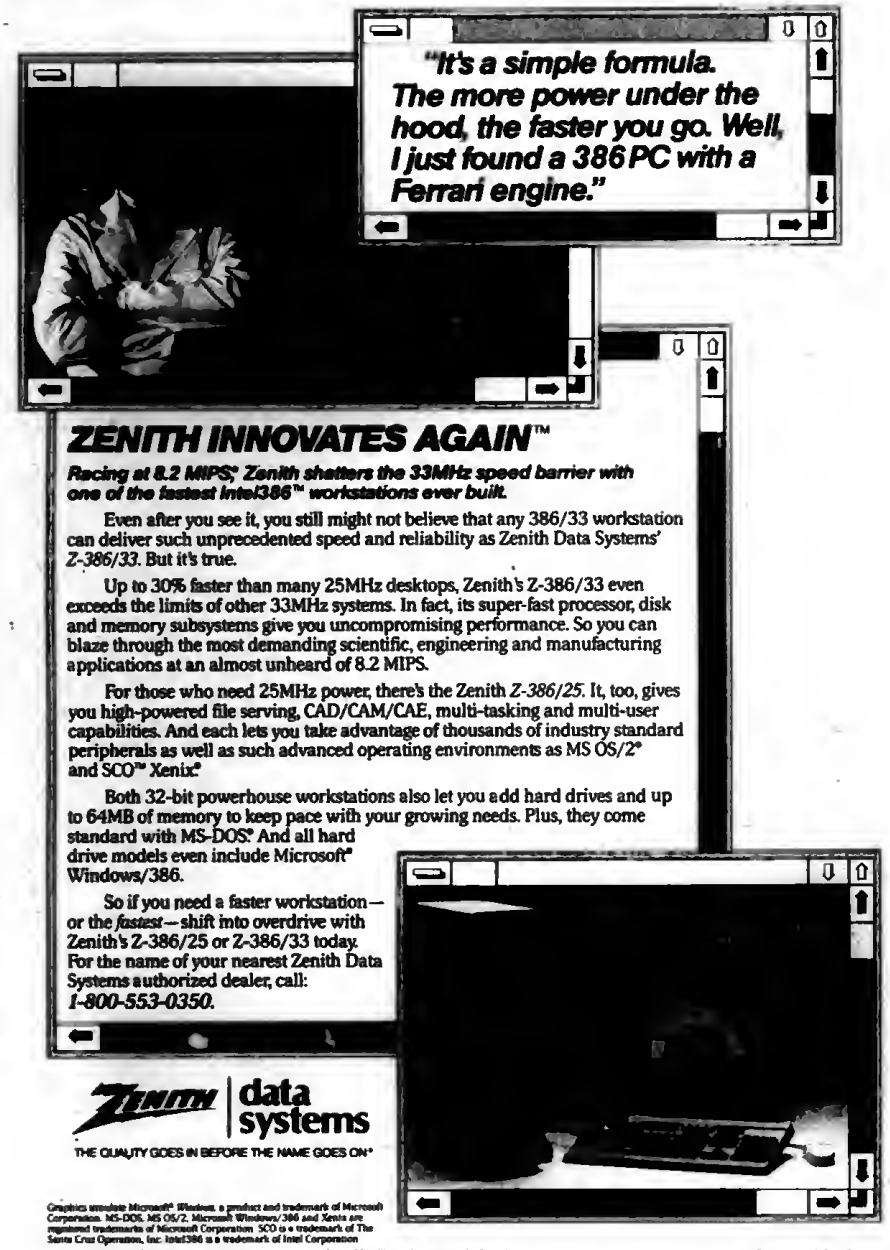
"Imaging systems are becoming so complex that we can't make a recommendation without first evaluating a customer's systems," said Randy Miller, director of marketing at the Kodak business imaging division.

IBM, which announced its image-applications strategy this spring, has several products in early-support sites, but volume shipments are not scheduled to begin until later this year. "We believe there's a fundamental shift in the industry, with customers choosing to buy services rather than just hardware or software," said David Liddel, manager of marketing plans at IBM's Image Application Systems Division.

IBM's Image Plus software for MVS/ESA mainframes and for System/36 minis is already installed at key customer sites, Liddel said. But Image Plus support for the newer Application System/400 midrange processor will not be available until March 1990, he added.

A new IBM workstation, the IBM 8508 monochrome display, demonstrated at the show, is slated to ship in September.

Costa Mesa, Calif.-based Filenet Corp., which has 250 installed image storage-and-retrieval systems nationwide, announced support for Sun Microsystems, Inc.'s Sparcstation, DEC's Decstation 3100 and Novell's Netware. The firm also demonstrated the OSAR-288, a jukebox for 5¼-in. optical disks.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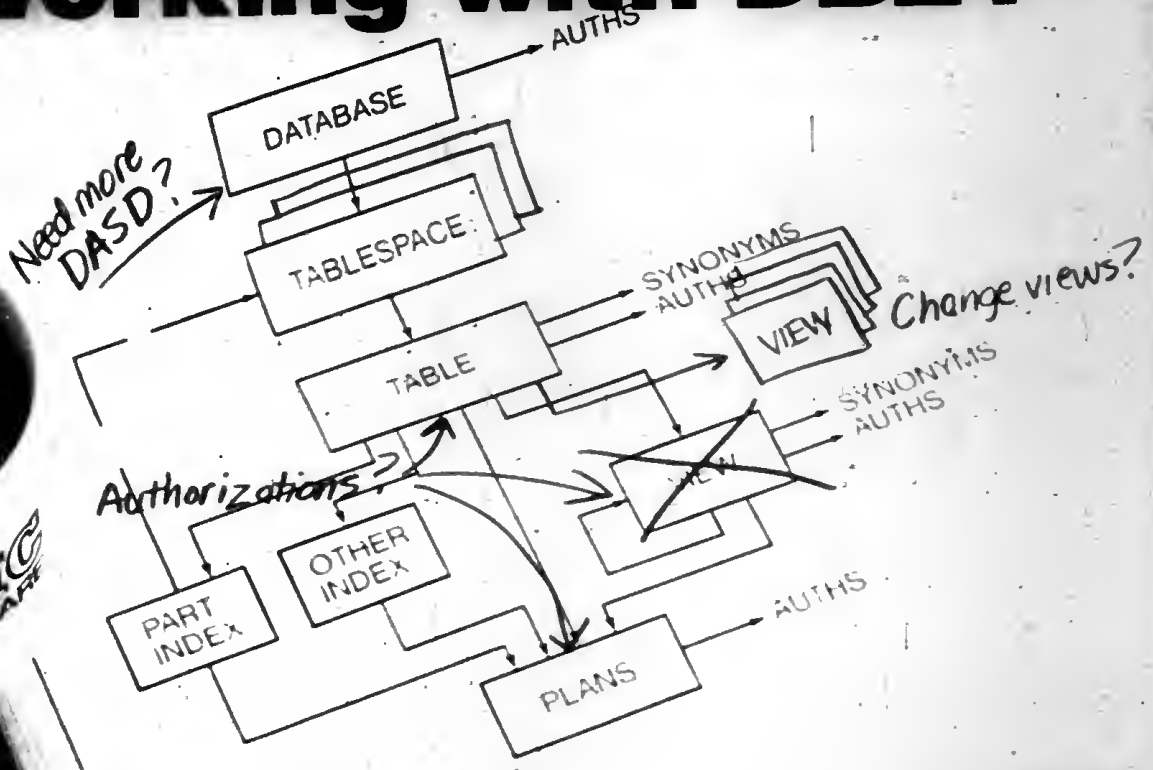

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Purdue's 'super' way to study viruses

Editor's note: This is one in a series of profiles of nominees for the Computerworld Smithsonian Awards, recognizing individuals and organizations that have achieved outstanding progress for society through the use of information technology. The awards will be presented in a ceremony held June 20 in New York.

BY CLINTON WILDER
CW STAFF

WEST LAFAYETTE, Ind. — Unlike information systems executives, Professor Michael Rossmann believes computers and viruses are compatible. In fact, he would not want to work on one without the other.

That is because Rossmann, professor of biological sciences at Purdue University, studies the other kind of viruses — the ones that cause disease in humans and animals.

By pioneering new data collection and programming techniques on a Control Data Corp. Cyber 205 supercomputer, Rossmann and other members of his research group have achieved the first near-atomic resolution of an animal virus.

"I certainly wouldn't like to do it without the computer," Rossmann said.

The Cyber computer is used to map the virus by processing massive amounts of data derived from the defractive behavior of tiny wavelengths of light — actually X-rays — aimed at the virus after it has been isolated in a crystallization process. After Rossmann's computer program runs an extensive analysis of that data, his team uses the results to plot an electron-density map of the virus at the graphic resolution of three angstroms — three ten-billionths of a meter.

"The idea is to pinpoint each atom in space," Rossmann said. "Those hundreds of thousands of atoms then represent the chemical properties of the virus. After achieving that, we can better study some very basic things about a virus which have never been known before."

Those properties include the way the virus components assemble to create the virus, the virus' parasitic behavior and the behavior of antiviral agents — such as antibodies from the host organism — in neutralizing the virus. The study of those properties is critical to the search for cures for diseases caused by the particular virus.

ARNOLD ZANN/BLACK STAR

Purdue's Rossmann *holds model of his research*

Rossmann has been studying the structure of viruses for many years and said he knew in the early 1960s what was needed to achieve near-atomic resolution of an animal virus. The problem was the lack of a tool to gather the vast quantities of defractive data. When Purdue became the second university to install a supercomputer in the early 1980s, Rossmann and his team went right to work.

Cold war

Graduate students and postdoctoral fellows in Rossmann's lab, collaborating with others working with University of Wisconsin Professor Roland Rueckert, achieved the near-atomic resolution structure of the common cold, or rhinovirus, in 1985.

By opening up the art of the possible, the supercomputer gave the researchers new confidence in their approach, Rossmann said. "The Cyber 205 allowed us to do in weeks or days what would have taken years," he said. "That really changes one's whole psychology. We never really had the courage to apply the method before, because if one doesn't have total faith, the years of writing programs and collecting the data may not produce results."

Although the rhinovirus was the first animal virus structure to be determined, Rossmann has since used similar supercomputer methodology to map the structure of the Mengo and HRV1A viruses. Other researchers at Purdue have mapped the structure of the black-beetle virus and bean-pod mottle virus, while Jim Hogle, a researcher at the Scripps Institute in La Jolla, Calif., has done the same with two polio viruses.

Several research efforts are under way to develop a comparable model of the enigmatic and much more complex HIV virus, the cause of Acquired Immune Deficiency Syndrome, or AIDS. "Whether that will be successful is an open question at this point," Rossmann said.

The use of computers for scientific research is very different from information technology in business. Breakthroughs are achieved very slowly and only by building on or drawing from a large body of previous research.

To that end, Rossmann's technique of harnessing the Cyber 205 as an effective tool in viral structure determination has given researchers another weapon in the battle against disease. But the war is a long one.

"A scientist never reaches his goals," Rossmann said, "but developing one technique allows other new projects to be undertaken. There are still great difficulties in preparing the crystal virus samples. But the computing, now that we know how to do it, is not difficult."

Microsoft tacks macro assembler onto Quick C

BY PATRICK WAURZYNIAK
CW STAFF

REDMOND, Wash. — Microsoft Corp. last week added an integrated macro assembler to its Microsoft Quick C Compiler program with the introduction of Microsoft Quick C with Quick Assembler 2.01.

The Microsoft update includes the added assembly language compiler module but does not change the package's C compiler; instead, it uses the same software in Microsoft Quick C Version 2.0.

Microsoft claimed the updated package was the first development environment offering an integrated macro assembler with a C compiler. The macro assembler module portion of the product is based on Microsoft's Macro Assembler 5.1, which it sells primarily to professional developers.

One early user who beta-tested the environment for Microsoft appeared to like the compiler's integrated assembly language capabilities. "What it does is it puts the nice context-sensitive Help for assembly in the program," said Abel DeSouza, coordinator of the assembler special interest group in the Houston area.

Another beta-tester found the Quick C update to be a fast, efficient development environment made easier to use with the integrated macro assembler. "I think it rounds out Quick C," said Stuart Bessler, vice-president of Syntex Corp.'s research division.

Like other packages in Microsoft's Quick language series, the Quick C compiler with Quick Assembler includes an integrated editor, compiler and debugger along with the full assembler module, allowing programmers to switch easily between tasks. The Microsoft Quick C Compiler with Quick Assember 2.01 is currently available at $199, the firm said. The updated program, which is upwardly compatible with Microsoft Macro Assembler 5.1, requires 512K bytes of memory, MS-DOS 2.1 or higher and a hard disk drive. Microsoft said it will continue selling Quick C Compiler 2.0, which does not include the macro assembler, for $99. Registered Quick C owners can purchase the Quick Assembler separately through Microsoft for $75.

DB2 conference plans in progress

BY ELLIS BOOKER
CW STAFF

CHICAGO — Plans for the first International DB2 Users Group (IDUG) conference are on track, and organizers expect 500 to 600 attendees at the Aug. 6-9 meeting here.

IDUG President William Backs said last week that the dates and schedules for IDUG 's first event have been confirmed, and registration forms for the August meeting have just been sent to approximately 25 regional DB2 groups in the U.S.

"We originally budgeted for 350 attendees," said Backs, who is also director of information technology at Scott, Foresman and Co. in Glenview, Ill., and a leader of the Midwest DB2 Users Group. That meeting's June date had to be changed, however, when IDUG officials realized it might conflict with the IBM's Share users group meeting.

Backs, however, does not believe Guide, Inc., Share and IDUG will compete. Unlike Share and Guide, "IDUG has no intention of delivering formal requirements to IBM," Backs said.

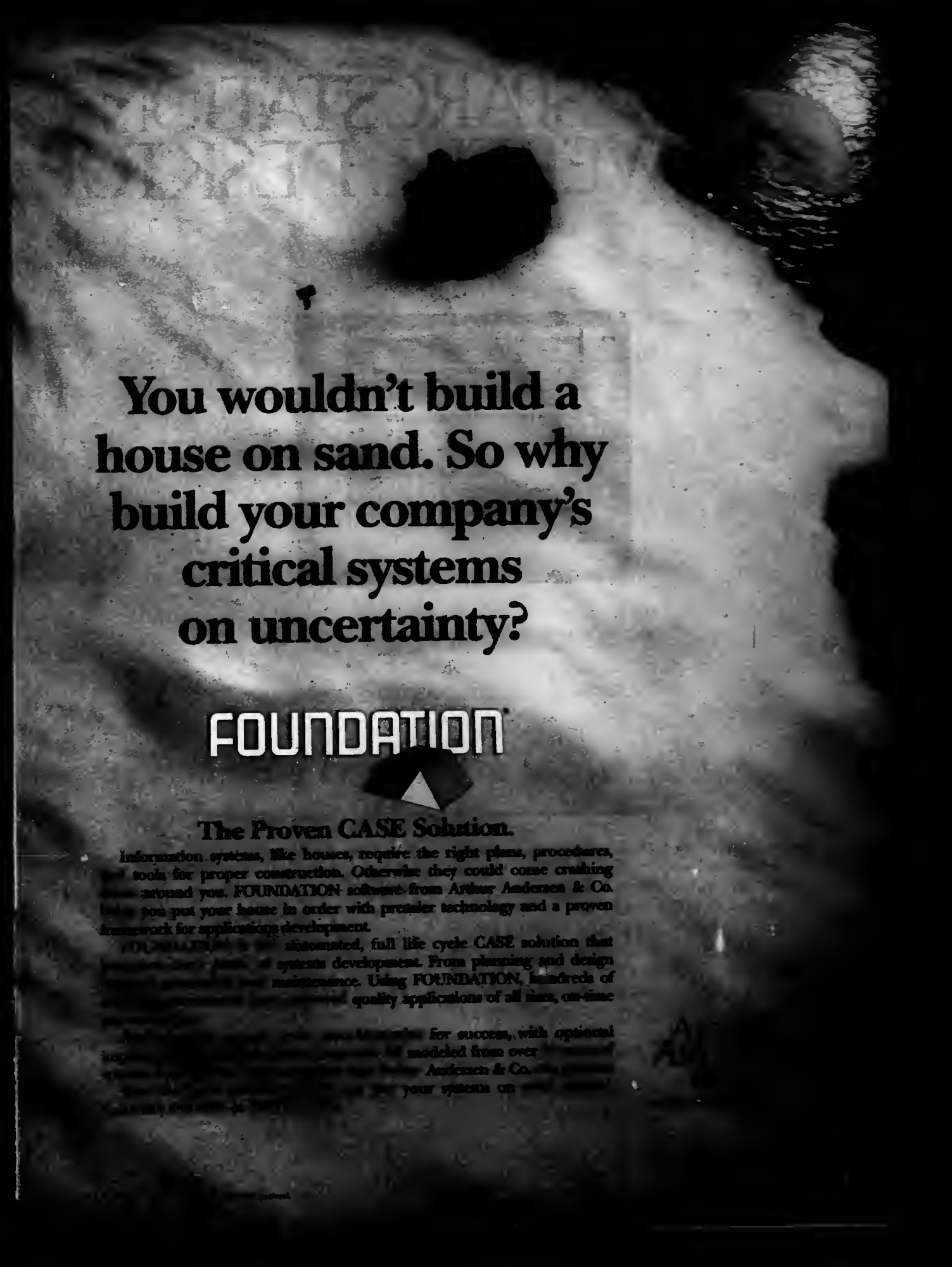
Backs does expect that if IDUG expands its international presence — an Australian representative will soon be added to the IDUG board — it will carry weight with vendors. However, he said, "We don't intend to try and influence IBM's direction."

Do as I say ...

In an ironic example of life imitating art, the following was revealed at the quarterly meeting of the Midwest DB2 Users Group last week — a meeting devoted to "DB2 Recovery."

It seems a DB2 file containing the mailing list of the group's 600 or so members was inadvertently purged earlier this year during a routine subsystem disconnection. Those responsible for the file, which resided on an IBM 3090 at Amoco Corp. in Chicago, had left the firm, so no one knew that the database had to be saved, a chagrined Amoco source and Midwest DB2 group member said. He said the officers of the group are now using a PC to input the reconstructed mailing list as an ASCII text file and are distributing backup copies among themselves.

ELLIS BOOKER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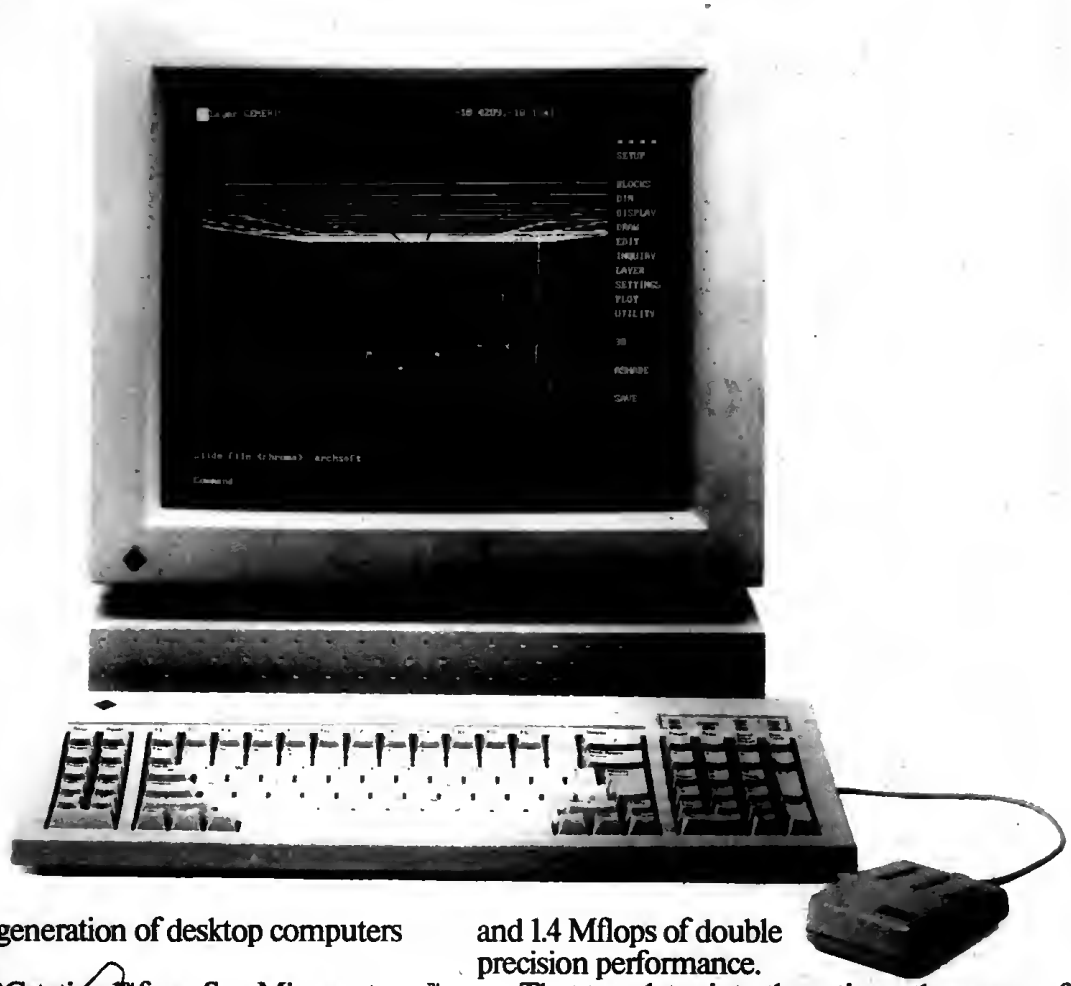

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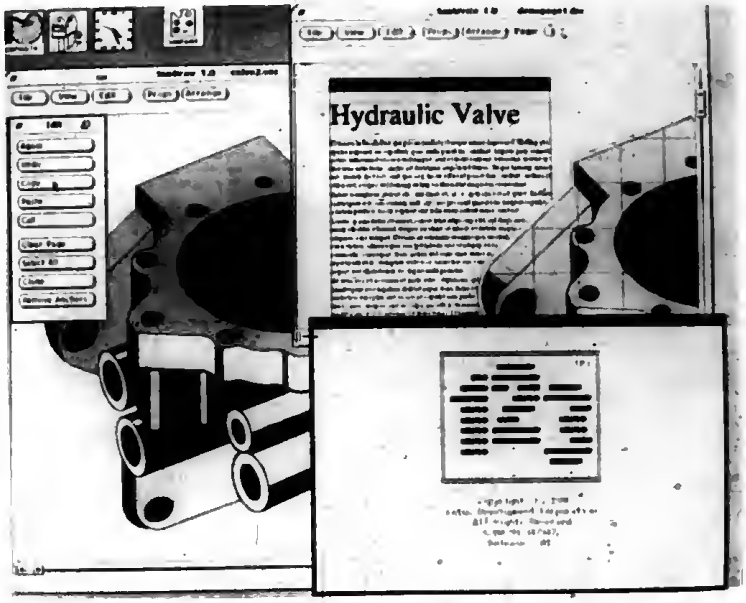

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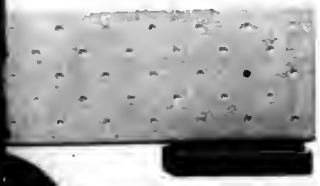
The SPARCstation 1 is the ideal machine for voice mail and multimedia applications. It has its own built-in speaker and microphone jack to record and playback music, voice or any other sound you like to hear.

And with our high-performance GX Series, the performance curve goes right off the chart.

A major technological breakthrough in computer graphics, our SPARCstation 1 GX produces up to 400,000 vectors a second. Giving you two times the graphic performance of any machine twice its price.

And it doesn't just speed up 2D and 3D wire frame applications, it speeds up the overall performance of your system. Including windowing and scrolling through text.

And the list of firsts goes on and on.



The SPARCstation 1 has a new very high speed bus that delivers many times the performance of a Micro-Channel architecture.

Which makes it very easy for your SPARCstation 1 to expand, connect and communicate with other devices.

From Laser Printers to Ethernet gateways.

For 3D applications, the SPARCstation 1 GX lets you interactively manipulate 3D objects at speeds that make ordinary workstations seem downright sluggish.

What's more, the SPARCstation 1 is a member of a whole family of SPARCstations and high-capacity SPARCservers.™

To hear all the details on the world's most powerful desktop and the other members of the SPARC family, call 1-800-223-6736. Or in California, 1-800-322-6736.

And get ready to set off a few sparks of your own.

sun microsystems

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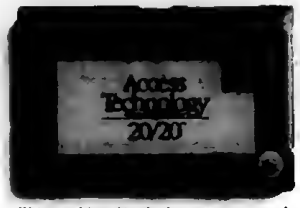


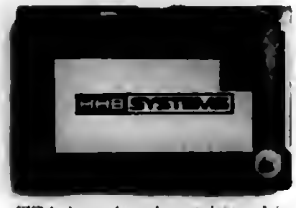
With powerful graphics, database management, and consolidation facilities, 20/20 is the only spreadsheet optimized for the Sun workstation, offering mouse support, dynamic windowing and pop-up menus.

Auto-trol Technology Supplier and Integrator DBMS-CAD-CAM-EPS.

CADRE provides software tools and integrated systems to manage and automate the design, code generation, and test of high-performance systems and software worldwide.

CATS Software has systems in operation on over seventy trading floors in twelve cities globally. A market leader in the development of financial software for fixed income derivative instruments.

Formed by the merger of Daisy and Cadnetix, DAZIX provides the richest set of CAE/CAD/CAM tools in the EDA industry. DAZIX EDA tools also support the industry's most widely accepted standards.



HHB develops, markets and supports design analysis systems used by electronics engineers. The company's products automate the design and test of integrated circuits, printed circuit boards and systems.

Statemate is the premier graphic computer-aided systems engineering tool for modeling, simulating and prototyping complex systems during specification. Users are leading Fortune 500 companies.

IMSL mathematical and statistical FORTRAN subroutine libraries reduce development time while increasing the accuracy and robustness of FORTRAN applications. IMSL makes FORTRAN more useful.

ART™ the Automated Reasoning Tool™ from Inference. Proven and powerful software technology for building and delivering expert systems that solve business problems.

Over 6,000 ASICs have been designed using LSI Logic's MDE tools with a Right-First-Time™ record. MDE tools can design ICs with up to 200K gates on a chip and entire systems of over two million gates.

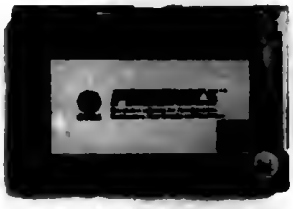
The MacNeal-Schwendler Corporation has been serving the engineering community for over 25 years. Today, MSC/NASTRAN is the most widely-used engineering analysis program in the world.

MATLAB™ software provides the high-productivity and high-creativity environment for interactive numerical analysis and graphical display in scientific and engineering applications.

ANVIL-5000™ 3-D CADD/CAM software for mechanical engineering integrates wireframe, surface and solids modeling; drafting; finite element mesh; and NC machining into a single database.

Major corporations worldwide are building knowledge-based systems with NEXPERT in finance, MIS/DP, manufacturing, and other industries. NEXPERT brings embedded intelligence to mainstream applications.

ParcPlace Systems is dedicated to improving the productivity of software development and maintenance in commercial organizations providing Smalltalk-80 and C++ object-oriented programming systems.



PHOENICS is the leading general-purpose software system for simulation of fluid flow, heat transfer, combustion and chemical reaction processes in mechanical, environmental or biomedical studies.

Saber-C is the complete C language programming environment. It improves programmer productivity and software quality during the implementation, testing and maintenance phases of software development.

SL-GMS—object-oriented system creates visual interfaces and precision screens for control, display and analysis of real-time, real-world processes and simulated visualizations without programming.

Thousands of C application developers worldwide use Objective-C™ to deliver the benefits of object-oriented technology in telecommunications, manufacturing, system software, financial services... and more!

SYBASE, the leading high performance relational database management system for on-line applications, features an advanced Client/Server Architecture with Window-Based, 4GL Development tools.

TeleGen2™ TeleSoft's Ada compilation system, offers a full-featured set of integrated tools for developing efficient, reliable ADA applications on all Sun platforms.

This is just a small sampling of the more than 500 SPARCware™ solutions available today. Which means you can immediately unleash the full power of the new Sun SPARCstation™ 1. If you would like to see more detailed information on any of these products

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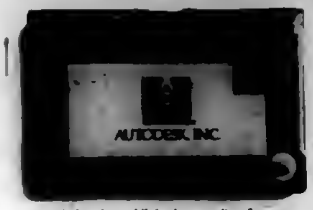
The Inspire™ erasable optical storage system lets you store 594 Mbytes on an ISO-standard, 5¼" removable cartridge. Rewritable and reliable, Inspire looks like any other disk drive to your Sun.

Sigma Design's ARRIS software offers architects and facility managers extensive 2D and 3D capabilities with UNIX flexibility. ARRIS is available through a world-wide distribution network.

Supercomputing for graphics and image processing. Parallel processing solutions for real-time scientific visualization, 3D simulation, medical imaging, image analysis and photorealistic rendering.



Autodesk is the world's leading supplier of computer-aided design and engineering (CAD/CAE) software for personal computers and workstations.

EEsof software simulates difficult high-frequency analog problems, like circuit board spurious coupling at 50 to 500 MHz clock rates, sub-ns driver rise-time, and GHz amplifier nonlinearity.

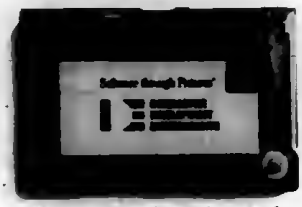
Eiffel, the most advanced object-oriented language and environment available, adds the full power of O.O. programming to modern software engineering principles. By Interactive Software Engineering.

FrameMaker® 2.0. Powerful, accessible publishing software that combines full-featured word processing, graphics, page layout and book-building tools for creating publication quality documents.

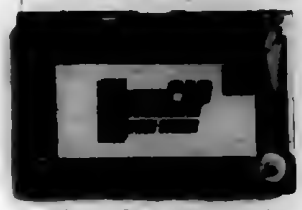
Harris Scientific Calculations produces the SCICARDS™. System for printed circuit board design. SCICARDS features 100% routing and many interfaces to companion tools for the total PCB design solution.

Informix Software Inc., develops and markets high-performance relational database management and office automation software for manufacturing, financial services, scientific and related industries.

INGRES combines superior application development and information management products that meet the challenges of performance and accessibility important to today's organizations.



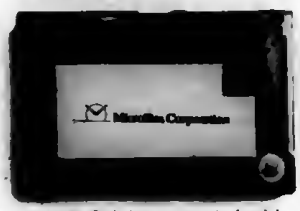
Software through Pictures™ delivers the promise of CASE by being the only integrated, multi-user CASE environment for all Sun architectures (Sun-3, Sun386i and SPARC machines).



InterCAP Graphics Systems provides automated graphics software—Illustrator II™—for dedicated illustrators; thus automating the process of creating, modifying and managing technical illustrations.

Image-Pro™ World's leading image processing software for image analysis, enhancement and interpretation. Available as easy-to-use application or powerful sub-routine library from Media Cybernetics.

Mercury's RISC-based 32 & 64-bit floating-point attached processors deliver up to 10 times application performance gains, and feature C & Fortran compilers, vector preprocessor, and math libraries.



PSpice, MicroSim's electronic circuit simulator helps engineers analyze and refine designs. With over 8,000 installations, more EEs use PSpice than all other commercial SPICE-simulators combined.

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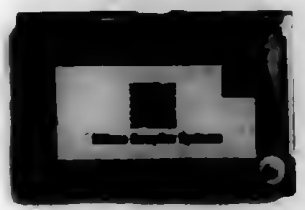
More than a million professionals throughout the world have made the SAS System the #1 choice for efficient data management, reliable data analysis, and effective reporting and graphic presentation.

SDRC is a leading international supplier of mechanical computer-aided engineering (MCAE) software and engineering services used by automotive, aerospace and industrial manufacturers.

Shinko printers make color prints & overheads easy to obtain. Shinkuool network software and 300 DPI A & B size printers and new 400 DPI scanner are available by Mitsubishi Int'l Corp.



For integrated circuit design, SCS offers a broad line of high-performance software tools. Leading semiconductor, aerospace and computer companies have chosen SCS for their state-of-the-art ICs.

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EDITORIAL

Footing the bill

THE FORTUNE 500 companies, virtually all of which are international concerns, seemed to have hit upon a great money-saving idea whose time has come. With communications budgets at times exceeding half the total IS budget, firms are finding gold when floating requests for proposals for revamping and expanding network services.

The roots of the potential savings can be traced directly to the very intense competition between what is really a small number of long-distance providers, mainly AT&T, MCI and U.S. Sprint. But as small as the number of competitors is, it is still greater than one, which is all big business had to choose from before the divestiture of AT&T five years ago.

How high can the savings pile when companies decide to offer themselves to the lowest bidders? Drexel Burnham Lambert, which has sought to trim 20% to 25% from its telecommunications budget, is being wooed by the big three with promises of savings in the 35% to 45% range [CW, June 5].

Last week another Wall Street heavyweight, Merrill Lynch, inked a major portion of a five-year, $150 million deal with MCI to provide worldwide voice and data transmission services. The savings to Merrill Lynch for its massive global network over current expenses will be large, with a healthy portion of those savings coming from Merrill Lynch's ability to bargain with a single provider for all its voice and data transmission.

The phenomenon of real competition in the telecommunications arena stands as a tribute to the way postdivestiture events were handled in the federal courts. In hindsight, breaking up AT&T into its long-distance and short-haul components may have been the easy part.

The real trick was in the controlled release of AT&T from federal regulation and oversight in such a way that a limited yet viable competitive market could develop. Certain competitive advantages were given to companies such as MCI and U.S. Sprint to counterbalance the enormous market position of AT&T, which gained its preeminent position through its earlier monopoly.

One critical area of advantage remains for AT&T's rivals, and that is the process of regulation and oversight AT&T must follow when setting new and selective tariffs.

AT&T is trying to work its way around this last obstacle to a level playing field when it utilizes the flexibility of Tariff 12 in developing proposals for custom networks for big customers.

But recent events and contract awards indicate that the long-distance providers are capable of competing effectively on an equal basis, and toward that end the Federal Communications Commission ought to move more quickly.

The deregulation-minded FCC has, in fact, been moving in this direction — but slowly. Failing to hit the gas in this process could actually exacerbate the anticompetitive situation the federal government has sought to ease, only with the shoe on the other foot.

LETTERS TO THE EDITOR

Wishful thinking

Your "In Brief" item, "It's baaaaack" [CW, May 22], did a real disservice to the computer consulting industry by perpetuating a misunderstanding. The 1986 Tax Reform Act did not, contrary to your report, force firms to classify all technical workers as employees. Section 1706 of that law instead stripped such firms of a "safe harbor" and required them to show that the workers pass the common-law tests of independent contractor status.

What you reported was apparently the wishful thinking of certain Adapso members who influenced the organization to lobby aggressively to save Section 1706 from repeal or amendment.

Adapso allowed itself to be coopted by these large consulting firms, emphatically stepping on the very same small firms it is now trying to attract. There was a certain poetic justice to "Adapso addresses identity crisis" in the same issue, which concerned Adapso's dwindling membership.

Jonathan D. Wallace
Attorney
New York

MBA the way

Regarding Efrem G. Mallach's commentary "MBA programs are wasted on most IS professionals" [CW, May 1], I take issue on a number of his points.

The IS profession has done itself a disservice by being "different" from the rest of the organization it serves. We need to do our own purchasing because the purchasing department doesn't understand our special requirements, and we need to control our own training because the corporate training department can't meet our "special" needs.

Mallach only adds fuel to the fire by saying our education needs are unlike those for other business fields. He states that "an MBA program is not enough for the IS professional." Couldn't other business disciplines make the same argument?

Mallach appears all too ready to pigeonhole IS professionals, in effect, saying that they are not capable of such challenges. They should be knowledgeable in many disciplines, especially the disciplines that they serve in their user community.

Businesses today need individuals that can effectively use IS technology as a strategic competitive weapon, no matter what their specialty is. Mr. Wallach himself, in an earlier commentary [CW, Feb. 17, 1986], stated, "Systems analysts who are less than expert in business issues will cripple your company."

The answer is that there must be both kinds of programs. MBA programs are intended to produce well-rounded individuals with some specialization. Let's stop the misconception that IS professionals should not aspire beyond the IS discipline.

Philip Friedlander
President
The Friedlander Group, Inc.
St. Petersburg, Fla.

Not waiting

With reference to "IBM's game: Wait for the leader" [CW, May 22], William Brandel begins by talking about Officevision and SAA, and ends by suggesting that IBM is waiting to see what Compaq Computer Corp. is going to do. He must be kidding. What application or use has Compaq ever led the way on? What claim to interest does it have other than faster and cheaper IBM?

William Hugh Murray
New Canaan, Conn.

The right tool

I was concerned by one of the comments in "DB2, IMS look at coexistence" [CW, May 1]. In fact, I agree that without the proper tools in converting IMS to DB2, one can "end up with a cripple." We designed our products to address the problems that can come up in this process.

It is not necessary to use the IBM DXT product to migrate from IMS to DB2. What was not explained in the description of our products is that in the conversion process, we reverse-engineer the IMS database descriptions into a data model first. This model is improved using the expert advisor facility in Bachman's products, which examines the model to determine if it conforms to the rules of concise data modeling and then makes recommendations. When the design is forward-engineered into the DB2 product, the expert advisor is again used to provide design recommendations specifically for DB2. The result is an intelligently designed and optimized DB2 database.

Charles Bachman
Chairman of the Board
Bachman Information Systems, Inc.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

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25. Dir., Mgr., Supv., Analyst of Systems
27. Dir., Mgr., Supv., of Programming
29. Programmer, Methods Analyst
29. Dir., Mgr., Supv., OA/WP
35. Data Comm. Network/Systems Mgr.

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13. Treasurer, Controller, Financial Officer
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51. Sales/Mktg. Mgr.

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Scouting out who's who in the exec's shop

BY MICHAEL COHN

There may be some team leaders out there with anxiety about managing people. Or maybe there are MIS directors who feel out of touch with their employees. Fear not! High-tech employees are now standardized, like everything else in the business. Every shop is made up of people who neatly fit into an easily recognizable category. Some might be a bit taller, have less hair, or have a little more trouble aligning the printer. But every shop has them.

Sometimes, during crunch modes or personnel shortages, some overachievers actually try to take on several categories at once and can downright baffle first-line management. But if executives can learn how to recognize who's who in the shop, they'll soon be able to dispense with all those complicated appraisals, motivators and strategies and get down to the business of grinding out that code.

Here's a quick primer for those in need of one:

The Martyr
Loves 80-hour weeks. Thrives on taking work home. Plans to work on weekends. Codes every program in two languages, just in case. Needs two printouts of a dump and copies one by hand.

The Old Hand
The Old Hand knows everyone in the company. Remembers every system ever installed. He will tell you that he's seen that bug a thousand times — usually 10 minutes after you've fixed it. He's been working in the department for years — probably on the same program.

The Buzzard
The Buzzard has no patience. He'll try to interrupt you to get his answer now, even if you have the CEO in your office. And heaven forbid that you are on the phone when the buzzard wants to get your attention — he will stand over your desk, or in your doorway, staring at the hole through the back of your head, until you either answer his question or chase him down the hallway with a desk lamp.

The Know-it-all
The Know-it-all has coded that routine a million times. He has read about that technology months ago. He likes to talk about how they did everything better at "the last place he worked." Slips all his assignments to the Martyr while nobody's looking.

The Meeter
Yes, the Meeter loves to call meetings. Loves to go to meetings. Loves to tell everyone who be just met with. Loves to make assignments, build action plans and pound on the table in meetings. He's never around to do any of the work — he's always in a meeting.

DAVID SHELDON

The Waiter
The Waiter can't start his program because he's waiting on the specs. Can't start his testing because he's waiting on a data set. Can't fix the bug because he's waiting for a job to run. Has *USA Today* delivered to his office.

The Asker
Never opens a manual. Asks, "Is this the right command? Do you know what this message means? How do you spell 'extension'?" He has somehow been able to get everyone else to do his work for years. Next in line for management position.

The Menace
Somehow, every report the Menace prints uses two boxes of paper. Every test hangs up the system. Production data sets disappear every time he walks through the computer room. He's not a bad programmer. He can get his jobs to run as well as anybody else. Ending them, however, is another story.

The Optimist
The Optimist is convinced that it can be done. Commits to impossible deadlines and countless deliverables, even if the team has to work 12 hours a day, seven days a week — for the rest of their lives.

The Pessimist
Knows that it can't be done. Or if it can be done, it can't be done on time. If it can be done on time, someone will forget to do it.

The Realist
Believes the Pessimist.

The Detailer
Takes multitudes of notes at meetings. Documents countless minuscule, meaningless facts in programs, logs and memos. Fills five-page source code with 15 pages of documentation. Recompiles dozens of programs to update his weight every time it changes. Fills out timecards within tenths of seconds.

The Guru
The Guru practically wrote the operating system. He has memorized the current and previous three versions of every source program. He's an indispensable technical resource. He has given two weeks' notice.

Cohn is a quality assurance representative based in Atlanta.

Big hat, no cattle?

BY GLENN RIFKIN

The speaker, a consultant from one of the Big Eight accounting firms, described his recent business trip to Texas.

He noticed that the natives weren't taking him particularly seriously in his decidedly un-Texas style of dress. So the next day, he purchased some boots and blue jeans and tried to mingle. The Texans weren't fooled for a moment. In fact, they had a local expression for just such occasions. They kind of rolled their eyes and turned away. "Big hat, no cattle," they said.

It was an appropriate story for a conference on the future of IS. At the dawn of an era when IS should be sitting at the lofty heights of corporatedom, there is more than a strong sense that top management is glancing at the IS department and muttering, "Big hat, no cattle."

Sure, there is plenty of lip service being paid to the remarkable importance of IS to the organization. Our *Computerworld* survey of CEOs [CW, April 17] supported again and again the idea that top management now realizes the impact that information technology will have on the bottom line and on the golden buzzwords "strategic advantage."

Blame it on IS
However, it is also clear that a wide abyss still separates IS from top management in most firms. As far as I can tell, most of the fault for this chasm lies with IS. IS may have bought some boots and blue jeans, but no one in the executive suite is standing up and saying "cowboy."

There is no doubt that IS as a profession is in the midst of a dramatic shift. The shift is not unlike the movement of a fault line in which the ground first starts to tremble, then rumble and finally shake into a full-fledged earthquake. Such ground shaking leaves a lot of people wandering around seeking balance; it leaves a lot of others on the seat of their pants.

When the shift is done, there is always a new landscape. In this case, IS ends up as a significantly different player in the company of the future. The question for the quake survivors is, "Who among you is ready to stake a claim in this new territory?"

A most telling result of our CEO survey was the view of IS as a career path to the top. Of the 100 top executives surveyed, 72% responded that it was unlikely that an individual coming from IS could ever take the top spot in the company. I personally talked to more than a dozen CEOs for the accompanying survey article and couldn't find one who thought IS had the stuff that CEOs are made of. Even the CEOs that are most aware of and appreciative of IS saw a few scrawny cows, but hardly a herd.

Of course there are exceptions. At this recent IS conference, I actually heard a very visible and highly respected chief information officer declare his desire to be CEO. If I were betting man, I'd say his chances for a top spot are even money.

But I also sat in on some breakout sessions at the same conference and watched with dismay when a roomful of IS managers, confronted with the challenge of a stilted destiny, hardly blinked a collective eye. Nary a one leaped to his feet, waved a fist and issued a challenge back to top management. The most energy that was generated was the response, "Hey, who even wants to be CEO?"

Second glance
Perhaps IS executives ought to reexamine that question. Not that IS leaders need to be spending their days plotting creative career paths to the top. Not that IS leaders would even make good CEOs. It is the aspiration to the top, the desire to help determine the future of the firm that IS must embrace if it is to truly be perceived as more than a service organization within the firm.

CEOs are not particularly concerned about the future of IS careers. CIOs, they say, might make good COOs someday. What *is* of concern is the 64% of those surveyed who said that they weren't getting the most from their IS investment. The pressure is clearly on IS to demonstrate the value of the multimillion-dollar systems that they've brought into the company over this past decade. CEOs have been force-fed the "strategic IS" line but haven't swallowed it easily.

So the responsibility drops squarely in the IS manager's lap. Are you up to this battle? Do you know how to stand up and state your case? Can you carry your own chair to the strategic planning table and look squarely into the CEO's eyes without blinking?

There's no magic formula for building this bridge. IS conferences can provide a needed broad overview of the state of the world — along with a chance to flex the corporate expense account. But the real test is back home in the trenches, where an IS manager can show that he or she has the right stuff. The real test is not only letting management know you've got the cattle, but that this beef is Grade A USDA Choice. Otherwise, IS may be just hat — old hat.

Rifkin is a *Computerworld* Features co-editor.

Don't underestimate Japan's IS know-how

READER'S PLATFORM

R. WADE SCHUETTE

As a computing professional and longtime observer of Japan, I'll throw in my two yen to the discussion you launched [CW, May 8] about the nature of the "threat" from Japanese software.

With the rapid emergence of computer-aided software engineering (CASE) tools, we are a relatively short time (five to 10 years?) away from the state in which the specifications-to-code steps are fully automated, and I foresee an emerging realization that this accomplishment really doesn't solve as much as we thought.

The central problem of IS is that we are trying to change the behavior of *people* by altering the embedded electronic infrastructure. Contrary to the assumptions behind most systems, people are different from missiles and washing machines.

While some of the past wreckage may be laid at the doorstep of inadequate hardware or software, most of the failure modes of large projects seem to be along the human, social, organizational and managerial dimensions — not technical ones.

It would seem that a slow, diligent and incremental approach to such development — rooted in consensus building before proceeding — may be the only approach that will actually have a hope of pulling together the fragmentation and heterogeneity within most large organizations today.

When human beings and turf are involved, systems integration is not an activity that can be rushed. Adding more and more people to the development team has, in general, a profoundly negative impact on the schedule and budget. The rate-limiting factor is not inside the box.

In the Japanese language, there is a tendency to be vague in order not to offend someone. Unfortunately, this can cause ambiguity in delivering the message in a technical area. Certainly this concern is deeply rooted in the culture and language and has been an impediment to everything from writing instructions to writing classical software "packages." However, it is precisely this concern that turns into an advantage when working out an implementation route between hostile departments in a corporate integration.

Also, it is not at all clear to me that the Japanese need to have any good "hackers" to succeed in this arena. What on earth good does it do to rapidly turn out clever, generic products that don't really fit the problem and don't really deliver the business solution that was hoped for?

I believe that the fraction of American systems and computers that actually have proven helpful to management is much smaller than generally believed. On the other hand, open almost any publication and read about the latest implementation disaster. Would you trust your own IS shop to wire the code for a medical life-support system that you are going to be on next year? Would you prefer a "team" of hackers or diligent detail men?

In IS, our task is not to find incredibly ingenious ways to solve fantastic problems — it is to find workable, reliable ways to deal with the same old problems. A slow and patient co-development may be the only way that such systems can be developed — grown, not built.

Chief executive officers are getting pretty tired of systems that promise much but deliver little. If the above analysis is correct, and the Japanese are the only ones capable of delivering, then they will simply walk in and take the market, whether they do "calisthenics at sunrise" or not.

Schuette is a database specialist at Cornell University's Johnson Graduate School of Management.

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SOFT TALK

Stanley Gibson

SAA makes forward pass

At IBM's recent Officevision announcement, SAA mentor Earl Wheeler came up with a great analogy for SAA cooperative processing.

"It's like the forward pass in football, with the potential to double a team's scoring by involving two players in an offensive play instead of one."

A masterstroke, I thought. Earl (or his speech writer) can really turn a phrase. I was so excited about this, I breathlessly relayed it to a *Computerworld* colleague. "That's a terrible idea," my friend snapped. "What would Woody Hayes say?" I was taken aback.

Woody Hayes, the late "three-yards-and-a-cloud-of-dust" football coach at Ohio State, was famous for his critique of the forward pass. "When the ball goes in the air, three things can happen, and only one of them is good," he used to say. The three things are, of course, a completion (good); an incompletion (bad); and an interception (really bad).

Ouch, Earl! Does that happen in cooperative processing too? Does that mean when data is sent to and from a host, the

Continued on page 39

DAT is slow but has its boosters

ANALYSIS

BY J. A. SAVAGE
CW STAFF

Digital audio tape, a backup storage system that writes data using helical scan technology — like a videocassette recorder but on media about the size of audio cassettes — is approaching general market availability. It is expected to be used for high-end workstation and low-end minicomputer archiving.

By the end of the year, tape drives will be available from several sources. But Hewlett-Packard Co. and Sony Corp. are likely to be the biggest promoters of the technology, in an attempt to get their agreed-upon standards to be the first accepted.

The technology, known as DAT, comes in two flavors: digital data storage (DDS) and Data/DAT. Analysts expect the two to be used for different types of archiving. "It's not right or wrong," said Bob Abraham, analyst at Freeman Associates, Inc. in Santa Barbara, Calif. "Like a pickup truck or a four-door sedan, it depends on what you need."

DDS and Data/DAT

DDS, the standard supported by HP and Sony, has a random-read but not a random-write feature. Data/DAT, which is supported by 12 companies, including Hitachi Ltd. and Toshiba Corp., has random read and write, according to Hinda Chalew, an analyst at Dataquest, Inc. in San Jose.

"It's slow but has attractive features," Chalew said.

Slowness applies to both standards. "It's about 100 times slower than a floppy," said Bert Vermeulen, product manager for DAT at HP's Bristol, England, location. Seek times are about 20 seconds for any part of the tape, he said. The transfer rate is 177K byte/sec. for Data/DAT and 183K byte/sec. for DDS, according to Abraham.

There is a trade-off: One 4mm tape stores more than 1G byte of data, and the price is around $2,000 per drive in OEM quantities. The only Data/DAT drives currently available are from Gigatrend, Inc. in Carlsbad, Calif., and they cost about $5,000 in quantity. Cartridges are about $10 each.

The form is particularly good for backup of imaging data, analysts and vendors said. "You can go to picture number 473 without looking at 472 others," said Lee Elizer, president of Data Storage Concepts, Inc. in Santa Barbara.

Hitachi takes lead

Data/DAT was originally championed by Apple Computer, Inc. "Apple thought it would drive the technology, but Data/DAT doesn't provide the kind of random access they want," Chalew said. Hitachi has now taken the lead role, she added.

Data/DAT features the ability to update information anywhere on the tape, unlike DDS, which allows information only to be appended. It is easier to access information randomly on the Data/DAT standard because of a slightly larger gap size between pieces of data, according to Elizer. The larger gap also contributes to its reduced capacity and throughput.

The Data/DAT standard also allows firms following it to change its format. The Data/DAT license is only for the "update and place" feature, according to a Gigatrend spokeswoman.

Championed by Sony and HP, which have a joint development agreement and licensing plan, the DDS standard appears to be the first drive widely available. Other companies, such as Wangdat, Inc. in Newport Beach, Calif., and Wangtek, Inc. in Simi Valley, Calif., have announced that their products will be available by the fourth quarter of 1989.

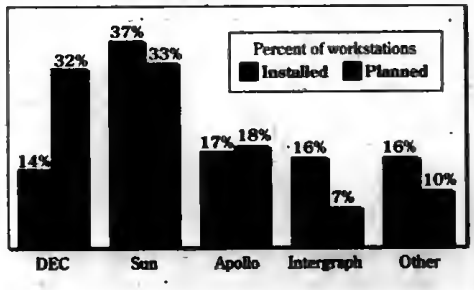
Lou Domsby, director of marketing for Wangdat, said that his company had looked into both formats. "Data/DAT is still being evolved," he said. "DDS is more mature. HP and Sony have taken pains to make it bulletproof."

Over time, the two formats will become more similar, Chalew said. DDS will become more application-sensitive and could possibly compete with erasable optical media. Except for analyst Chalew, who does not see an end-user market, vendors and analysts believe the price will decrease rapidly.

Data View

DEC poised to claim own ground

In a survey of VAX sites, only 14% of engineering workstations in use were DEC's; however, purchase plans suggest DEC will soon rival Sun



SOURCE: COMPUTER INTELLIGENCE

CW CHART: FRANK C. O'CONNELL

Inside

- Study says ESA will turn half of 3090 sites' heads by 1990. Page 33.
- Census takers find their way on multimillion-dollar maps. Page 33.
- Landmark monitors MVS performance. Page 43.

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HARD TALK

Rosemary Hamilton

Standing at a crossroads

If you've got an IBM 3090 in your shop that needs more memory, I hope you don't have to make a decision on it very soon.

You have two options but no easy decision. You could go the safe route with IBM, but you'll be signing a very big check. Or you could save lots of money and turn to third-party suppliers. But this option is bound to give you a headache.

Third-party vendors, which are offering products at 20% to 30% below IBM's prices, could be giving users a great deal. *Could* be. Unfortunately, the suppliers, particularly EMC and Cambex, have recently been engaged in a game of one-upmanship that has done little more than generate confusion. A user trying to select one of them better have plenty of time on his hands to sift through the marketing hype.

Initially, the two concentrated on pricing and tossed out typical competitive jabs when given the chance.

Then EMC announced its Remote Support Facility, a million-dollar investment designed to offer users continuous support on their 3090 memory products. EMC ballyhooed the opening of the facility. In response, Cambex said EMC was inflating its investment and added that all a vendor needed

Continued on page 41

Tracking 240 million people

Census Bureau replaces manual labor with computer-generated maps

ON SITE

BY LAURA O'CONNELL
CW STAFF

When the census taker comes knocking on your door next year, ask to see his computer-generated map; the government will have spent a decade and more than $200 million to put it in his pocket.

How do you count 240 million people in the first place? The U.S. Bureau of the Census does it in two ways: by mailing questionnaires to homes in urban areas and by sending out map-toting field enumerators to tally rural districts. After the census, the bureau issues new maps to municipalities as part of a local review program.

"By the time we provide maps to the states for redistricting — because the primary purpose of the census, of course, has to do with redistricting of the state legislatures in Congress — we will have produced about seven million map sheets," said Bob LaMacchia, assistant division chief for planning in the Geography Division of the Census Bureau.

The sheer volume of maps turned the 1980 decennial census into a clerical nightmare. Thousands of workers manually coded and corrected data, drafting maps that, in the end, enumerators often could not read. That is when the bureau decided to automate.

Now 43 Calcomp electrostatic plotters, installed in 1988, do the work. These plotters are scattered throughout the dozen regional offices and run off tape drives. To print maps, the plotters simply spit out data from plot tapes generated by the bureau's Unisys Corp. 1100/94 mainframe.

There also are Unix-based Tektronix, Inc. graphics workstations that recently began rolling off delivery trucks. These workstations are stepping in for 125 nearly decade-old Tektronix 4115s.

"We didn't know what hardware we were going to get.... We had what we call a 'family-of-computers' procurement for the Census [Bureau], and that was something DEC won. So part of that was to provide the computers for the geographic support system [we would create]," LaMacchia said. What Digital Equipment Corp. pumped into offices nationwide were 19 VAX 8530s.

The restructuring started in 1981, when the bureau set out to develop the system it calls TIGER, for Topologically Integrated Geographic Encoding and Referencing system. At the heart of TIGER is a digital cartographic database containing names and locations for all transportation routes, addresses and political and statistical boundaries in the U.S.

The Census Bureau struck a deal with the U.S. Geological Survey (USGS) to use maps from the latter's 1:100,000 scale series. Already digitized by the USGS, the maps provided accurate but nameless representations of roads, railroads, rivers and major power lines, which census workers subsequently labeled. To this base, the bureau added its own digitized maps for

Continued on page 39

Study sees steady shift to MVS/ESA

BY ROSEMARY HAMILTON
CW STAFF

By the end of this year, about half of all IBM 3090 sites will have committed to IBM's Enterprise Systems Architecture (ESA) operating environment, according to a recent International Data Corp. survey.

Users are very bullish on ESA, IDC said. When asked how much of a performance boost they expect ESA to bring, nearly half predicted it would be between 10% to 30% more than MVS/XA. But David Vellante, an IDC analyst, said that based on initial implementations, a more realistic number would be no more than 10%.

The 100 3090 sites surveyed also held high expectations for a relatively smooth migration. Many said they expect it to be much easier than the MVS-to-MVS/XA move. Thirty percent of the group said they expect to be operational with ESA by year's end.

IDC said one ESA migration snag appears to be implementing the System-Managed-Storage components. Installation of the operating system component, MVS/SP Version 3, is reportedly going like clockwork. But the storage-related software requires much more planning and effort, Vellante said. Users said they are moving to the new environment for the promised performance boost ESA will bring to their database management systems and CICS. Users gave nearly equal weight to IBM DB2 and CICS performance boosts as reasons for migration.

On the move

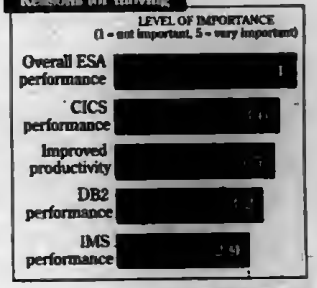
Among 100 IBM 3090 users, more than half have converted to ESA or plan to do so this year. The major impetus is improved performance.

Implementation plans

PERCENT OF RESPONDENTS

Reasons for moving

LEVEL OF IMPORTANCE
(1 = not important, 5 = very important)



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INSIDE THE INDUSTRY

DCA: More Than Just Irma

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122 Computer Systems News

Monday, November 14, 1988

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BY JOHN THOMPSON

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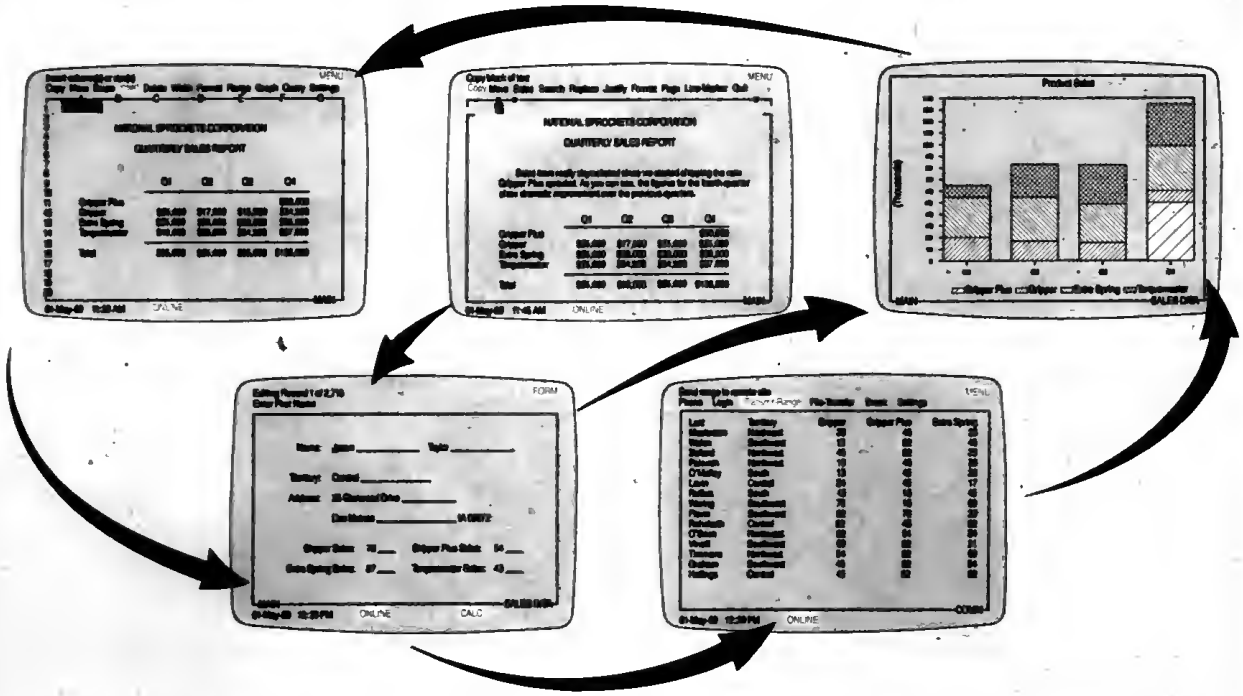

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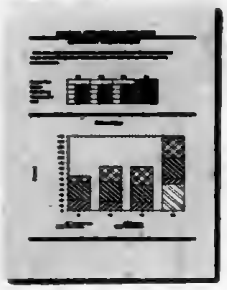

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Parker Pen to cap mainframe-to-mini move

BY ROSEMARY HAMILTON
CW STAFF

JANESVILLE, Wis. — By next month, the information systems staff at Parker Pen U.S.A. Ltd. will have completed a 15-month conversion project that will take them from an IBM mainframe environment to an IBM System/38.

The way MIS Director Dennis Hopper tells his story, it might have been easier to uproot his staff and move it to a foreign country. When asked what the project entailed, Hopper first answered, "Twelve cases of Excedrin," in a half-joking manner.

But Hopper said he is pleased with the progress and is as committed to his decision to switch today as he was a year ago.

The staff is currently installing the last major software piece, an integrated financial package that has been in test for several months. All other stand-alone packages, such as the human resources and telemarketing applications, have been running on the System/38 since late last year. When the financial package is given the OK, the plug will be pulled on the IBM 4341.

Parker Pen, which is owned by 100-year-old London-based Parker Pen Ltd., had been an IBM mainframe shop since the 360 architecture days. Last year, however, it decided it was time for a change and chose System/38s for the parent company and the U.S. organization.

There were a number of goals to meet. First, the company wanted a smaller, less complex and less expensive system to operate. Second, it wanted a system based on a database environment. Third, it wanted the system to be on-line-oriented.

At the time, the IS staff decided that if it could meet those criteria in the IBM 370 world, it would do so. If not, it would look for a new platform.

No room to grow

The one possible 370 option that would have met some of the criteria was the IBM ES/9370. But that system was quickly ruled out. "We would have come in on the very high end with no place to grow," Hopper said.

Hoping at least to stay with the same vendor, Parker Pen next looked at the System/38. It met the criteria, but there was one problem. "At the time, the limit was the Model 700," Hopper said. "The 38 had always frightened us because of that limitation."

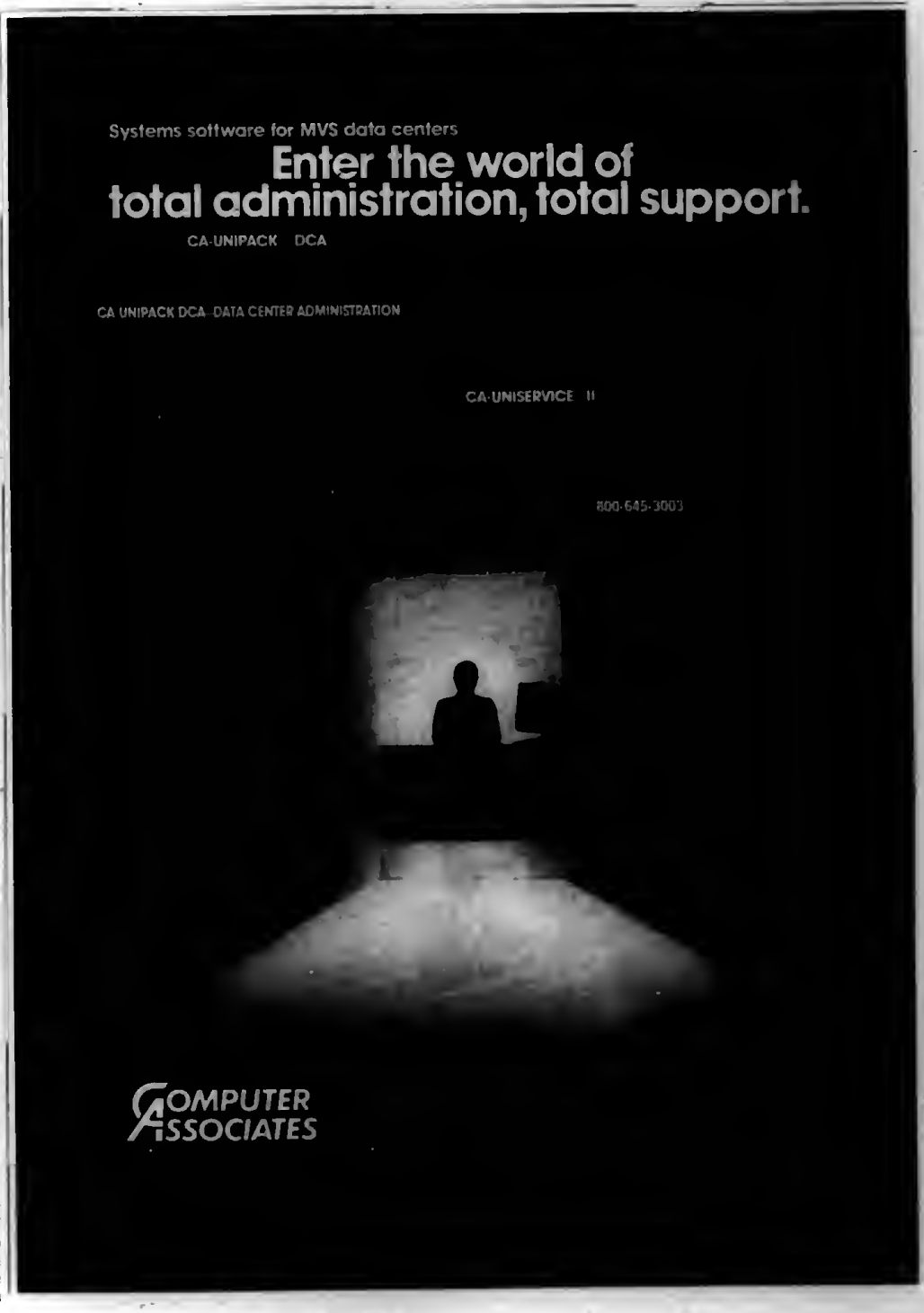
But Parker Pen gave the System/38 a look in early 1988, when IBM was starting to show some users what the future of the System/38 would be. A trip to Rochester, Minn., convinced Parker Pen that the future AS/400s could provide them with bigger systems if needed.

But Hopper's team elected to go with a System/38 Model 600 in March 1988 — just a few months shy of the AS/400's introduction — instead of waiting for the newest generation. "Our primary goal was to get to that technology," he said. "Then we'll look at the AS/400. We'll let other people debug it first."

When the System/38 arrived on schedule, the hard work began for Parker Pen. Hopper had to transform a a group of 370 veterans into System/38 experts and RPG programmers. Weeks of training began with each staffer receiving an average of four weeks of IBM schooling.

A consultant was brought in to oversee the development staff, which had a mammoth task ahead of it. IS was scrapping 4341 applications and buying new System/38 applications, but all the corporate data had to be pulled from the 4341 and reformatted to be read by the System/38. In addition, the new applications had to be tweaked for Parker Pen's operations.

In June, the staff began loading the software, and records from the 4341 were put on the System/38 and tested. Slowly, the firm went into production mode with the applications, and one set of applications remains.



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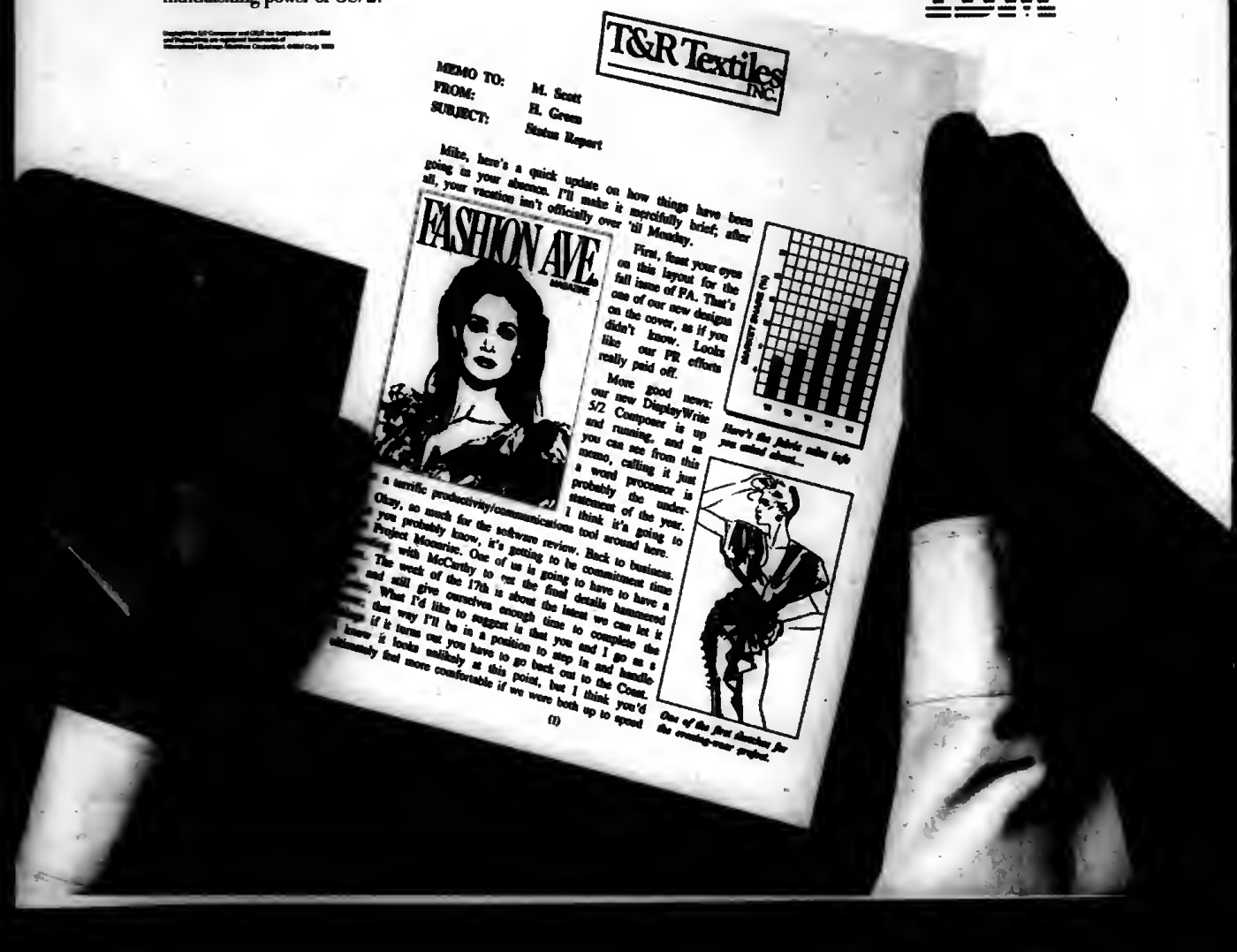
IBM


T&R Textiles INC.
MEMO TO: M. Scott
FROM: H. Green
SUBJECT: Status Report
Mike, here's a quick update on how things have been going in your absence. I'll make it mercifully brief, after all, your vacation isn't officially over 'til Monday.
First, feast your eyes on this layout for the fall issue of FA. That's one of our new designs on the cover, as if you didn't know. Looks like our PR efforts really paid off.
More good news: our new DisplayWrite 5/2 Composer is up and running, and as you can see from this memo, calling it just a word processor is probably the understatement of the year. I think it's going to be a terrific productivity/communications tool around here.
Okay, so much for the software review. Back to business. As you probably know, it's getting to be commitment time with McCarthy to run the final details hammered out. The week of the 17th is about the latest we can let it and still give ourselves enough time to complete the [illegible]. What I'd like to suggest is that you and I go as a team that way I'll be in a position to step in and handle [illegible] if it turns out you have to go back out to the Coast. I know it looks unlikely at this point, but I think you'd ultimately feel more comfortable if we were both up to speed
(1)
FASHION AVE
magazine
Here's the fabric sales info you asked about.
One of the first sketches for the evening-wear project.

Verity revamps database tool

BY PATRICK WAURZYNIAK
CW STAFF

MOUNTAIN VIEW, Calif. — Verity, Inc. updated its Topic text information management system last week, with new functions including support for real-time information sources, images, interdocument connectivity or hypertext, as well as an applications programming interface.

Verity also announced production shipments of SQL Bridge, an interface between C Topic and SQL-based relational database management systems.

Verity's Topic, introduced last year, uses an expert system known as concept retrieval to pull unstructured data from databases in client-server environments.

Topic software, which runs in networked computing environments under Digital Equipment Corp.'s VMS, MS-DOS and Sun Microsystem, Inc.'s SunOS version of Unix, consists of Topic Retrieval Clients, Topic Database Builder and Topic Database Servers.

Topic Version 2.0, currently in beta test, will use Topic Real-Time System (RTS), which supports live documents from dynamic data sources to provide real-time information analysis and dissemination. The product is scheduled for delivery in July.

According to Verity, applications for Topic's RTS are financial analysis, trading operations, intelligence gathering and news services. The RTS imports text from live document sources, such as news wires and electronic mail and notifies users when documents arrive with content that matches the user's interest profile.

A typical configuration, which includes the Topic Database Builder and Topic Database server, ranges from $7,500 to $110,000, depending on the platform and number of users.

The Topic Real-Time System module is similarly priced starting at $15,000. The Topic SQL Bridge is available now for $2,500 for Oracle Corp. Relational Technologies, Inc., Sybase, Inc. and Informix relational databases.

Tracking

CONTINUED FROM PAGE 33

areas outside the 48 contiguous states and corrections from each of the bureau's regional offices. The biggest headaches came in trying to put it all together.

"We had digital files in '80, but we did not use them for mapping. [This time] we tried to fit it all together. Sometimes it didn't fit that well, so we had to write programs to go looking for the other end of a road, so to speak," said Larry Taylor, a geographer in the Census Bureau's Geography Division.

All of this initial file building was done by batch processing on the Unisys mainframe, upgraded from an 1100/74, at the bureau's headquarters in Maryland. This single computer decided where to place every label on every map. A decade ago, Census Bureau clerks did this work by hand.

All-around updates

Currently, Census Bureau staffers are updating boundaries for all incorporated municipalities — about 39,000 of them.

When it is finished conducting the census, the bureau will sell the new map files and update them throughout the 1990s. Potential customers include city and town departments such as police and fire, developers of futuristic automated navigation systems for automobiles, even high-tech vendors such as software companies.

Not only will the TIGER system ensure more consistency and accuracy, it is also making census operations more cost-effective. Although he could not put a current price tag on the TIGER system, LaMacchia said, "The original estimate that we made back in 1981 or 1982 to build it and use it was approximately $200 million.

"That would be about the same cost — or slightly cheaper — than it would be to do the same job today using the techniques that we used in the 1980 census," he continued. "So the cost savings come in the future when we don't have to repeat this. . . . All we have to do is maintain the file."

Gibson

CONTINUED FROM PAGE 29

data transmission can go through, be incomplete or be accessed by a competitor? Sounds a lot riskier than straight traditional processing to me.

About half the passes thrown in football are incomplete. And what about the server getting sacked? I can just see a Mark Gastineau look-alike hacker doing a victory dance over some poor server that he has just brought to its knees.

How terrible it would be for a competitor, with a click of a mouse, to pick off a document in midtransmission and take it for a big strategic gain. Well, Earl, you better rethink that analogy. The brilliant idea doesn't look so hot after all.

Wait a minute. Of course! There is another innovation particular to football that could make the gridiron image fly. Cheerleaders. Yes. IBM could ship a set of four, six, or eight cheerleaders (depending on the user's configuration). They could provide the pep that SAA needs.

What knowledge worker would object to being cheered on as he revises documents or merges files? I can hear the cheers now: "Two, four, six, eight, time to recalculate!" And, "Go, Big Blue!"

Yes, Earl, that's it! Oh, just one more thing. If you do follow through with this idea, don't forget where it came from: intellectual property, you know.

Gibson is Computerworld's senior editor, software.

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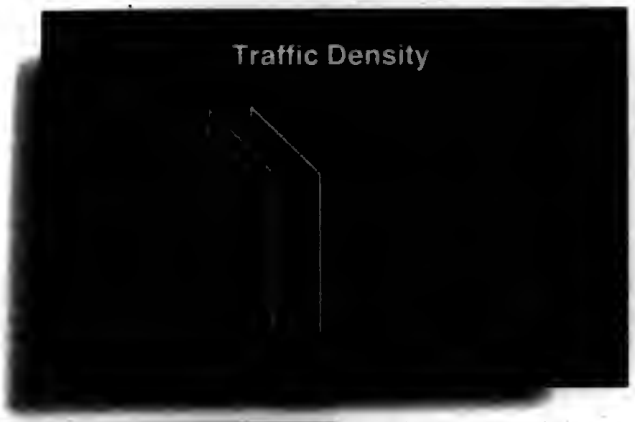

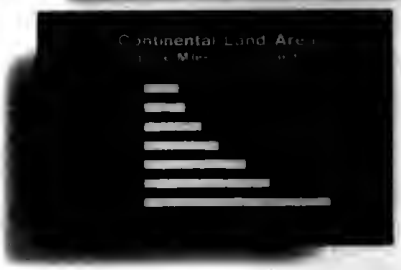

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HARD BITS

Storage Tek welcomes VM

Storage Technology Corp. said its Automated Cartridge System will support the IBM VM operating environment by the third quarter. The Automated Cartridge System, which Storage Tek first introduced for IBM MVS environments, is a cartridge-based library system that is capable of handling millions of cartridges. A maximum configuration would allow for storage of 24 million cartridges. In the VM environment, the Automated Cartridge System would require an interface to Systems Center, Inc. VMtape software.

Filenet Corp. in Costa Mesa, Calif., is making its image access software available on Sun Microsystems, Inc. platforms, including the Scalable Processor Architecture, or Sparc, family of workstations.

Kennedy Co. in Irvine, Calif., a division of Shugart Corp., reported that it will supply ½-in. tape drives to Unisys Corp. The company said the Unisys deal could bring in up to $50 million.

Advanced Computers, Inc., a subsidiary of Bolt, Beranek and Newman, Inc., joined the 88Open Consortium, a group that promotes the Motorola, Inc. 88000 microprocessor.

Digital Equipment Corp. recently awarded James C. Fletcher the Digital Discovery Award for continued excellence in science. Fletcher is the former administrator at the National Aeronautics and Space Administration.

NCR Corp. signed an agreement with **Software Alliance** that calls for both parties to sell the Software Alliance banking software package on the NCR Tower family of supercomputers. Software Alliance's Total Banking Solution currently runs on NCR personal computers and is scheduled to be ported to the Unix-based minicomputers in July.

Pyramid Technology Corp. said it plans to sign a deal with Intersystems Corp., a supplier of MUMPS software. MUMPS, the Massachusettts General Hospital Utility Multi-Programming System, is a database-oriented programming language. The two firms intend to jointly develop a symmetrical multiprocessing implementation of Intersystem's M/SQL, a relational database management system and application generator. Intersystems claims to have 2,000 MUMPS installations worldwide.

Hamilton

CONTINUED FROM PAGE 33

was a remote workstation to tie into the customer's facility.

This sort of bickering is commonplace, and most users can easily cope with it. But the most recent sparring between the two is another matter. It concerns EMC's recent announcement of two memory options for the 3090 that IBM itself doesn't offer.

Options, options

Both options require a modification to the 3090's system parameters to let the CPU know how much memory is on the system. This is where a user must tread carefully.

One option would allow users to configure memory on two-sided E models in different amounts on either side of the processor complex. The second choice would allow them to stack up to twice as much memory on 3090 Model 180Es and 280s than IBM currently allows users to install.

Both options could benefit users. But modifications to IBM's microcode can be a prickly issue. Users interviewed recently said they were hesitant to make any microcode changes for the sake of more memory.

So what does EMC say? The company says that the modifications amount to very minor tweaking. EMC will do the tweaking and load the memory, and then IBM will come in and recertify the machine for maintenance.

That sounds so simple. Well, Cambex says it is too simple to be true and suggests that EMC's latest move could mean trouble for users.

According to Lou Finnegan, Cambex's vice-president of marketing, the company won't offer any memory options that IBM doesn't offer because it does not want to risk incompatibility or leave a customer with a recertification problem.

"One of the reasons we've been reluctant [to add options] is that we're not sure what IBM's position would be on the maintenance of the machine," Finnegan said.

Where to turn?

So, who should a user believe? An IBM spokesman said, "It's a very complex issue, and we don't yet understand enough about what EMC claims to be doing to respond."

Of course, what a user should not do is dismiss the third-party suppliers because of this confusion and go the safe route with IBM. It may take a little longer to understand exactly what they're offering, but the third parties have some good deals.

Users should be very careful about EMC's new options, but a purchase of a straight memory upgrade from that company or any other supplier is worth considering.

Hamilton is *Computerworld's* senior editor, hardware.

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NEW PRODUCTS — SOFTWARE

Applications packages

Aries Technology, Inc. has added a software module to its Conceptstation mechanical computer-aided engineering software series.

According to the vendor, Conceptparametrics is a parametric design module that allows design modification at any point in the development cycle. Engineers can associate variable design parameters directly to solid-model definitions, the company said. The module is priced from $2,900 to $3,825, depending on the hardware platform, and is scheduled for delivery this month.

Aries Technology
600 Suffolk St.
Lowell, Mass. 01854
508-453-5310

Unisys Corp. has announced the availability of its Airline Revenue Enhancement (ARE) software system for AT&T Unix-based minicomputer platforms.

Designed to monitor and analyze airline booking activities, the software is said to be identical in functionality to the mainframe-based ARE system. It is written in Unisys Mapper C software; the latest configuration operates on Unisys' U series of Unix-based minis. The price is $400,000.

Unisys
One Unisys Place
Detroit, Mich. 48232
313-972-7000

General Automation, Inc. has released a word processing system developed specifically for users of its Zebra family of Pick Systems' Pick-based multiuser systems.

Called Keyword, the software is written in assembler and comes with manuals and user training aids. Features include revise, search, print, move, copy, rename, delete and mail functions. Pricing ranges from $1,200 to $2,500, depending on computer size and number of users on the system.

General Automation
P.O. Box 4883
Anaheim, Calif. 92803
714-778-4800

Unitrac Software Corp. has released Version 4.0 of Unitrac, sales and marketing management software designed for Wang Microsystems, Inc. VS-based minicomputers.

The product contains account management, statistical inquiry, sales cycle analysis and mail-merge. It also offers a 45% reduction in disk storage requirements, the vendor said.

Unitrac 4.0 is priced from $3,500 to $50,000, depending on system configuration.

Unitrac
229 E. Michigan Ave.
Kalamazoo, Mich. 49007
616-344-0220

Landmark tool targets MVS users

Landmark Systems Corp. in Vienna, Va., has unveiled The Monitor for MVS, a performance-monitoring software tool developed specifically for IBM MVS/XA and MVS/ESA system users.

According to the vendor, most existing MVS monitoring packages were designed under IBM's 370 architecture and have subsequently required patching through the years to address today's more complex MVS systems.

Landmark's *monitor addresses today's MVS systems*

The firm estimates that one-third of existing MVS/XA sites are currently operating without a performance-monitoring software capability.

The product includes a real-time exception monitor, an I/O subsystem monitor, a delay monitor and a historical performance database with report-writer capabilities. An on-line source of recent information across the complete operating system is also provided. The software was designed with easy-to-read graphics and menu-driven interfaces.

The Monitor for MVS monitors single or multiple CPUs and includes the following: real, expanded and virtual storage; direct-access storage device activity and performance; tape activity; printer activity; console activity; and detailed job execution and delay analysis functions.

The software is currently in beta testing and is slated for general availability in the third quarter, the company said. A permanent license will reportedly cost $35,000 per site with free maintenance for the first year.

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MICRO BITS

Douglas Barney

Window pains

Tastes great; more filling: It isn't exactly common knowledge, but Microsoft Windows is quite a bit like Ronald Reagan. Both are ambitious, colorful, rooted in the West Coast, getting on in years and occasionally fail to make any sense whatsoever. But the biggest similarity is that they both tend to induce schizophrenia, an aberrant mental condition that only professionals should diagnose or spell.

Don't believe it? Then think of all the people who despised certain Reagan policies but were quite fond of the man. Those people are called Democrats. Only a total fanatic could utterly dislike this former president. He's just so nice.

So it is with Windows. There are those who love the look but hate the performance. Others enjoy the initial hand-holding but resent the intrusion of the interface once they get rolling.

Key software makers, who are supposed to have a handle on this stuff, haven't decided whether they like it, either. Sometimes companies such as Wordperfect, Borland or Ashton-Tate will say nice things,

Continued on page 49

Who gives final nod to IS buys?

BY MICHAEL ALEXANDER
CW STAFF

Although end users have more influence on the purchase of personal computers and other technology these days, the information systems department still calls the shots when it is time to put money down on the table.

According to the Datapro Research Division of McGraw-Hill Information Services Co., end users frequently participate in the decisions to buy PCs, even to the point of choosing equipment and setting purchasing priorities. But those users seldom have the authority to approve purchases.

IS, on the other hand, is more likely to set hardware purchasing priorities, choose equipment and authorize minor and major buys, Datapro said in a newly published study on microcomputing trends.

"That's how it works here," said Willi Hartung, assistant vice-president of IS at Central Maine Power Co. in Augusta, Maine. "We set standards and do the purchasing. End users have say-so in choosing the equipment — they have a relatively large list of approved hardware and software to choose from — but we don't let them buy whatever they want."

Divided lines of authority

Setting priorities for equipment purchases and selecting products often are cooperative efforts, but IS chiefs have the final say at most sites

Percent of sites*

	Setting priorities	Choosing products
Director, manager of IS	49%	60%
End-user department director, manager	31%	42%
President, CEO, executive VP	38%	16%
PC or information center manager	16%	34%
Chief information officer	15%	12%

* From a survey of 309 corporate executives at medium-size and large firms; multiple responses allowed

SOURCE: DATAPRO RESEARCH CORP. CW CHART: JOHN YORK

Datapro found that there are three distinct groups that have responsibility for setting priorities, choosing products and authorizing purchases.

In small organizations, end-user departments and chief executive officers share responsibility for choosing products, though CEOs alone authorize major purchases. In medium-to-large organizations, the IS department selects products, sets priorities and authorizes minor and major purchases. In large organizations, the chief information officer and information center staff share decision-making duties, but the CIO alone authorizes major buys.

End users and IS executives are more likely to be allies than adversaries, although appearances may sometimes suggest otherwise. If there is tension between the two groups, it is because they face many of the same organizational and technological issues, Datapro said.

Initially, placing computing

Continued on page 48

Turbo tools applauded

Users say design, object-oriented features are key

BY PATRICK WAURZYNIAK
CW STAFF

SCOTTS VALLEY, Calif. — Borland International, Inc.'s Turbo Pascal and Turbo Pascal Professional are drawing rave reviews from end users. Both software packages have been enhanced with object-oriented capabilities.

Among the beta-site users impressed with Borland's Turbo Pascal Version 5.5 update is Jon Shemitz, president of Santa Cruz, Calif.-based Emerald City Software. After testing Version 5.5, Shemitz said be is considering the Borland package for developing an object-oriented software tool-set package.

Shemitz, a user of Turbo Pascal since Borland released Version 1.0, said the company has accomplished "an amazingly elegant design" with its update of the software, which is said to be compatible with Borland's earlier Pascal offerings. Shemitz said that Version 5.5's object-oriented capability will speed development for programmers.

"At this point, we're still in the experimenting stage, but I'm pretty impressed," said Shemitz, whose development and consulting firm specializes in graphics and multithreaded, event-driven software. "It has different and better syntax, and in many ways, things are clearer when using objects," Shemitz said.

Likewise, John Drabik, director of advanced technology at Number Nine Computer Corp. in Cambridge, Mass., said the Borland offering will make programming much easier. He noted that although Number Nine primarily uses the C programming language, lately many programmers have been asking for Borland's Turbo Pascal.

Drabik, a user of Borland's

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Inside

- Brand names still carry weight, though they cost an arm and a leg. Page 47.
- Sun breaks through with GXI accelerated graphics board. Page 47.

First COBOL Presentation Manager Application! See It At PCExpo/CASECON

Micro Focus, the company that introduced COBOL to the PC, will be giving an advance peek at an exciting breakthrough for COBOL and COBOL application developers. Micro Focus will be showing a sample Presentation Manager application developed entirely in Micro Focus COBOL/2 using its powerful new extensions to the COBOL syntax.

At the same time, Micro Focus will be showing the SQL support to be embedded in the COBOL/2 compiler and several other features that will change the way programmers think about COBOL.

Stop by and see Micro Focus COBOL/2 at **Booth #4018** at National CASECON, June 20-22nd, New York, Jacob Javits Convention Center. Or call us at 1-800-872-6265 or 415-856-4161.

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Attachmate Corporation 13231 S.E. 36th Street, Bellevue, WA 98006 (206) 644-4010

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PC Magazine "Editor's Choice," December 13, 1988

SMALL TALK

J. A. Savage

Looks, feels like trouble

I get suspicious when lawyers start ensuring their comfortable retirement by convincing people that "they've got a case." It seems like I've been hearing that rhetoric from intellectual property lawyers during the last few months.

If you think there should be an addendum in the Bill of Rights guaranteeing the freedom to use technology without memorizing complicated prompts, you should be suspicious as well.

Friendly graphical interfaces are vital to nontechnowhizzes. They allow us to use technology that otherwise would be too complicated to grasp.

By necessity, the interfaces must look alike — much as a stick shift on a Ferrari and one on a Volkswagen are similar enough to enable us to drive either without returning to driving school.

Common denominator

Microsoft, Hewlett-Packard, Apple, Xerox and Metaphor should have something in common. And for the sake of humans' access to and organization of information, their interfaces should be nearly identical.

Apple, and now Xerox, are impeding the progress of not only others in the industry, but technology itself. They're denying humans access to technology. As lawyers would say, they're having a "chilling" effect.

Continued on page 48

Despite price, many cling to brand names

ANALYSIS

BY WILLIAM BRANDEL
CW STAFF

They look the same, weigh the same and essentially do the same things. But brand names and reputations are still causing many users to choose premium-priced personal computers over lower-priced but comparable systems, despite cost differences of up to thousands of dollars.

Case in point: Compaq Computer Corp. and AST Research, Inc. each recently introduced a new line of machines with Intel Corp.'s 33-MHz 80386 microprocessor. Compaq's 386/33 Model 320 and AST's Premium 386 Model 325 are similarly configured systems. Each PC has a processor that is 33% faster than its predecessor, zero wait-state memory caching, an enhanced small device interface disk controller, two serial I/O ports, IBM Video Graphics Array support, a 320M-byte hard disk drive, one 5¼-in. 1.2M-byte disk drive and 2M bytes of memory.

In total, the AST system has seven expansion slots, and the Compaq machine has eight. Each vendor also offers a plethora of options, include math coprocessor support. Both vendors tout their machines as ideal CAD/CAM/CAE platforms and PC local-area network servers.

The Compaq system costs $14,999, and the AST system costs $11,195 — a difference of almost $4,000, which is about the cost of an Intel 386SX-based system.

"As an MIS director, you're buying into the notion of reliability and the perception of better support," said Sam Solomon, vice-president of MIS at DRI/McGraw-Hill, an on-line financial information service located in New York. "This is why IBM and Compaq can get away with charging a premium price."

"You're buying job insurance," Solomon continued. "No MIS director is going to jeopardize their job over $4,000."

Solomon speculated that Compaq can also rationalize the price by "skimming the cream" — making a large profit on a few sales to leading-edge companies before IBM introduces its system. Solomon predicted that the Compaq machines will drop to the $10,000 level in a few months or after IBM introduces its version of the 33-MHz product.

On the defense

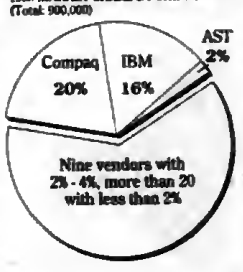
Compaq's director of marketing, Lorrie Strong, defended the firm's premium pricing by touting the Compaq system's faster memory caching, faster processor and 50% speed increase in VGA performance.

"We're also not forcing an architectural change on the user," Strong said, referring to IBM's Micro Channel Architecture. "We're better at what users want. IBM has just introduced its 25-MHz 386 system, [but] we introduced ours last June."

IBM will ship its 33-MHz product by year's end, according to David Wu, a research analyst at New York-based brokerage firm S. G. Warburg.

What's in a name

Compaq can capitalize on name recognition as a U.S. market leader among Intel 80386-based PCs, while AST is near the bottom



Wu said he believes that AST intentionally waited for Compaq to introduce its premium systems so it could drastically undercut Compaq afterward. "If AST is willing to take lower margins to do business, they'll get it," he said.

'IBM-only'

However, Wu warned that the 33-MHz 80386 stand-alone market is somewhat limited, and the omen of IBM's system still looms in many IS sites.

"Compaq does better with the end user, while IBM is still somewhat dependent upon its IS relationships," Wu said. "But this will work for them. Many customers still have an 'IBM-only' mentality," which has carried over from IBM's traditional mainframe market dominance, he said. "The brand name means a lot to these customers."

"As customers become more computer-literate, they are becoming less timid about going out and shopping [for a bargain]," said Brian Faukes, manager of marketing programs at Dell Computer Corp. in Austin, Texas. "Customers are starting to find that they don't necessarily get the best for their money for [spending] the most. But it is still a slow migration away from the top-tier brand-name mentality," he acknowledged.

Info Builders puts new Focus on PCs

BY ROBERT MORAN
CW STAFF

NEW YORK — Information Builders, Inc. recently introduced PM/Focus, a Presentation Manager version of its fourth-generation language and database management system.

PM/Focus is based on the company's Focus product for mainframes running IBM's MVS and VM and Amdahl Corp.'s UTS operating system and is based on the company's PC/Focus, a micro-based version for application development and decision support.

Focus also runs on minicomputers from Digital Equipment Corp., Hewlett-Packard Co., Tandem Computers, Inc., Wang Laboratories, Inc. and most Unix-based systems. PC/Focus, according to the company, offers transparent portability of character-based applications across all supported environments.

The new version adopts IBM's Presentation Manager. Chuck Tuat, assistant vice-president of Johnson & Higgins, an insurance brokerage firm in New York, said that his company, which maintains client databases on PC/Focus, will soon migrate to that product.

The step will enable Johnson & Higgins to move beyond the memory constraints of MS-DOS and tie its insurance applications into a LAN. "We will be able to have multiple users updating the same database during renewal times when we have a heavy work load," Tuat said.

Insulation

PM/Focus uses a client/server architecture and a LU6.2 communications protocol for distributed processing among IBM Personal System/2 and Personal Computer AT computers and host systems running Focus.

According to Information Builders, Focus insulates users and applications developers from the complexities of cooperative processing by automatically distributing applications functions among processors.

Users with multiple platforms will be able to port PM/Focus applications to virtually any graphical user interface, including HP's New Wave and DEC's Windows, without modification. PM/Focus creates a complete description of applications, which the local window environment then interprets, the company said.

"Conceptually, PM/Focus will allow applications builders to concentrate on the depth or features of the application rather than worrying about building hooks for the back end or the front end," said John Dunkle, vice-president of microcomputing at Work Group Computing, Inc., a consultancy based in Exeter, N.H.

Focus database applications were portable on the back end, but the interfaces were different for the DEC VAX and IBM platforms, for example, said Paul Hessinger, president of Computer Task Group, Inc., a consultancy based in Buffalo, N.Y. "PM/Focus will give Focus portability on the front end," he said.

PM/Focus works with all Focus systems and provides transparent access to database management systems. The release features tool sets for reporting, graphics, statistics and spreadsheets.

Prices have not been established.

Sun kicks off 386I graphics board

Accelerator puts performance pedal to the metal

BY MICHAEL ALEXANDER
CW STAFF

Attendees at the A/E/C Systems '89 conference in Anaheim, Calif., last week got the first glimpse of Sun Microsystems, Inc.'s GXI accelerated graphics board for the company's Sun 386I workstation.

GXI promises to boost performance of two-dimensional graphics functions such as vectors and area fills for applications such as computer-aided design. It will also reportedly accelerate windowing, scrolling and text processing, according to Andrew Nilssen, senior product manager at Sun's East Coast division in Billerica, Mass. "It's more than a graphics accelerator; . it will make the whole system feel faster," he said.

The Sun 386I, based on Intel Corp.'s 80386 chip, is the first workstation able to run both Unix and DOS simultaneously in multiple windows and exchange information between programs, Nilssen said.

GXI accelerates overall graphics performance for Unix applications that run on the Sun 386I and increases the speed of text-processing nearly twofold, the company said.

The device is based on the Texas Instruments, Inc.'s TMS34010, a five million instructions per second graphics processor, widely used in the high-end personal computer market. That chip has been augmented with a custom Sun application-specific integrated circuit that speeds graphics functions such as vectors.

The graphics accelerator is available now, Sun said. Owners of 386I workstations can upgrade to the GXI graphics environment for $2,750.

Savage

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With Xerox offering licenses for its pioneering work on graphical interfaces from icon design to scroll bars, start-up software companies will be forced either to shell out for the license or risk fighting giant Xerox in court.

That's just what Metaphor did at the end of May. Instead of going though a lawsuit, Metaphor decided to get on with it and buy Xerox's license.

"We still believe we could continue to do what we were doing without infringing, but we've had to spend a lot of time and effort over the years to avoid the picket fence," said Dave Liddle, Metaphor chairman.

Before founding Metaphor, Liddle headed Xerox's graphical interface development project. He said it has been difficult to design the interface around Xerox's imposed limitations and that the license gives Metaphor "almost unlimited freedom."

According to Liddle, IBM — which owns 10% of Metaphor — will not be paying the royalties, thus squeezing tiny Metaphor's profit margins. Earlier this month, the company announced that IBM will market its Data Interpretation System software on IBM platforms.

Friendly at first

Xerox didn't start out with a picket fence. First, it didn't have many lawyers in the late 1970s and early 1980s, the time period when it was developing object-oriented programming and graphical interfaces.

Perfecting object-oriented software was so difficult that Xerox brought in other hardware companies to help it out.

HP, Apple, DEC and Tektronix all shared development of the first interface — called Smalltalk 80 Version 1.0 — in the early 1980s and were given a license to use that version, according to Adele Goldberg, president of Parcplace Systems, Inc. in Palo Alto, Calif., and former developer of Smalltalk with Xerox.

"In exchange for implementation, they had the license," Goldberg added.

Attorneys for HP, Apple and Microsoft freely admit Xerox pioneered the graphical interfaces they now use. But that was an era of cooperation; those companies were all still struggling, and IBM towered in the personal computer market. Welcome to the late 1980s. Now, they'd rather sue each other.

If I invent something, such as this column, I should be able to copyright it. It's the same with software. But we're not talking about an individual software developer or the manner in which the software is developed — only the way it looks. Columns look alike, too, but I wouldn't want to sue a fellow columnist over the fact.

HP and Microsoft attorneys are unconcerned that Xerox's move will affect the copyright infringement lawsuit they are fighting after being sued by Apple over "look and feel."

Suits them fine

Apple attorney Jack E. Brown said there was no reason why the licensing announcement should affect the company's lawsuit.

"Xerox is entitled to copyright protection. Apple is entitled to copyright protection," he said. That's what keeps intellectual-property attorneys in business."

"It depends on the scope and validity of their rights," said HP attorney Stephen Fox. Because Xerox has not specified its claims, Fox said that he cannot determine any effect on HP.

Fox said that one of HP's primary claims is that the graphical interface that Apple claims it owns was not developed by Apple but by Xerox.

Lawyers will make a profit either way, but computer companies should draw their profits from how well the hardware and software work, not on what they look like.

Savage is a *Computerworld* West Coast correspondent.

IS buys

CONTINUED FROM PAGE 45

power in the hands of end users appeared to threaten the traditional corporate hierarchy. Companies are moving to networking and distributed computing, but this trend does not mean that the authority is being taken away from IS and placed in the hands of end users. Instead, these technologies can be integrated into a wide variety of corporate structures, Datapro said. If anything, connectivity has reinforced the role of a central authority.

Datapro also noted in its report that sales of PCs with Intel Corp. 8088 and 8086 microprocessors will remain surprisingly strong in the next 18 months and that 80286 and 80386 chips will converge to nearly equal rates. Also, MS-DOS will keep its market dominance for the next two years, though OS/2 will grow slowly and steadily. Of the companies surveyed by Datapro, those that were successful implementing OS/2 projects were using OS/2 for its strengths in real-time processing, transaction processing and distributed database management.

At the leading edge of microcomputing, in which the shift from DOS to OS/2 is the most rapid, end users and PC managers play a strong role in driving purchasing decisions, Datapro said. Unix and Xenix-based systems will not make any headway at the PC level, according to Datapro.

He also doesn't realize Hewlett-Packard makes PCs.

That's unfortunate. Because Hewlett-Packard has a line of eight high-performance personal computers. PCs which range from desktop and floor-mount Intel386™-based powerhouses to entry-level 8086-compatibles. PCs which offer you a better way of doing business.

Hewlett-Packard personal computers give you plenty of opportunity for expansion. As

The HP Vectra QS/20 PC. One in a line of eight PCs from Hewlett-Packard.

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Barney

CONTINUED FROM PAGE 45

and sometimes they'll slam Windows. Maybe they're just moody.

Not everyone is so torn. There is a diehard contingent of Windows fans and an equally hard-core bunch of bashers. I recently met a chief information officer with an IBM Personal System/2 Model 80 who still complains that Windows is too slow and intrusive. Fans, though, drool whenever Windows appears on the screen. Morton Downey Jr. could go to town with guests like these.

The overall market is just as confused. A lot of units have shipped (approximately two million), but nobody is sure how many are in use. As a result, it is impossible to call Windows either a success or a failure. Its future is just as uncertain. If people haven't yet decided if they like Windows, they may never make up their minds.

If all this sounds familiar, it is because the same strange dynamics emerged first in the Macintosh market. Nearly everyone likes the way the Macintosh looks, but few are thrilled with the total domination of the graphical environment, particularly when it saps the performance of the otherwise sporty Motorola 68000 processors. After doing the same thing 80 times, I shouldn't have to pull down a menu and click a mouse that keeps running over my paperwork.

Many packages eliminate menu dependence with keyboard shortcuts, but your fingers can get twisted up hitting Alt/whatever all day long.

It is clear that graphical environments are a big trend and do great things. But to truly dominate, they need to blend the niceness of the Macintosh with direct keyboard control. Maybe there should be a little command line somewhere just waiting for the input of an anxious user. Or perhaps the system could record how often we've done something, and once we are adept, dispense with the menus. Of course, after a long, mind-emptying vacation, the menus would automatically be turned back on.

What is lost in all this interface hooey is that Windows is utterly unnecessary for the creation of elegant graphical programs. More and more packages are showing up that include nicely done pull-downs, dialog boxes and crisp, colorful screens. Because these do not have the burden of a lot of junk interface code, they are exceedingly fast. Examples include Symantec's Grandview, Microsoft Works and just about any computer game.

Whether we buy Windows packages or not, most of us pay good money for software and deserve the best of both worlds. So, vendors, work on stuff that looks great but is less filling of things such as memory and CPU cycles. Then, like Ronald Reagan, you can sit back and watch your popularity rise.

Barney is a *Computerworld* senior editor, PCs & workstations.

well as plenty of options. At the high end, you can get up to 8 accessory slots, 620 Mbytes of hard disk storage, and 16 Mbytes of RAM. And on all models, you get a choice of video solutions and the flexibility of using either 5.25" or 3.5" disks.

Beyond this, an investment in Hewlett-Packard PCs allows you to choose confidently from thousands of software applications and peripherals. HP's strict adherence to industry standards insures compatibility. Now, and into the future.

But the most important feature, the one you won't get with any other personal computer, is Hewlett-Packard reliability. For 50 years, HP has promised, and delivered, exceptional quality in everything from calculators to HP LaserJet printers.

Finally, every PC made by Hewlett-Packard is backed by an extensive network of trained, authorized dealers. For more information and the name of your nearest dealer, call 1-800-752-0900. You'll soon realize what an HP personal computer can do for you.

There is a better way.

HEWLETT PACKARD

Turbo tools

CONTINUED FROM PAGE 45

Turbo Pascal since the release of Version 2.0, called Version 5.5 "fantastic."

"Not only is it pleasant to see, but with the object-oriented capabilities, Turbo Pascal is even easier than ever to use. It allows you to avoid all the kludges that you encounter. With object-oriented Pascal, that all goes away. You don't have to worry," Drabik said.

According to Drabik, one of the most significant advances for Turbo Pascal is the method in which the program handles static as well as dynamic objects, thereby greatly simplifying the tasks of programmers.

"The ability to support both static and dynamic objects will be a big boost to Borland over Microsoft. As I understand it, Microsoft doesn't have 'that,'" Drabik said.

Keeping up

Borland released its update just weeks after Redmond, Wash.-based Microsoft Corp. released its object-oriented version of its Quick Pascal compiler for a price of $99.

Borland's addition of object-oriented programming to Turbo Pascal has allowed the firm to regain its former foothold as the premier purveyor of teaching languages; said Fred Thorlin, an analyst at San Jose, Calif.-based market research firm Dataquest, Inc. "It's almost not even the same language," Thorlin said, "now [Borland] has taken all that [object-oriented] jazz and put it in the product."

Until Borland revised the Pascal programs to include object-oriented programming capabilities, the firm's Pascal offering had slipped slightly as other, less popular languages — such as Smalltalk from Xerox Corp.'s Palo Alto Research Center and AT&T's C++ — beat the company to the market with object-oriented language products.

"It looks very powerful," Thorlin added, noting that Borland included the three main object-oriented programming features — encapsulation, inheritance and information hiding — into the updates.

Turbo Pascal Version 5.5 remains priced at $149.95. Pricing for Turbo Pascal Professional Version 5.5 is also unchanged at $250. A Turbo Pascal Runtime Library is available for $150. Turbo Pascal Version 5.0 customers can upgrade to Version 5.5 for $34.95; owners of Turbo Pascal 4.0 and 5.0 can upgrade to Turbo Pascal Professional 5.5 for $99.95.

NEW PRODUCTS

Systems

Televideo Systems, Inc. has announced a price reduction for its 386/16 family of personal computer systems.

According to the vendor, the cuts will affect the Telcos IIIZ Model NHZ, which will now retail for $2,995, and the Model 40Z, which will be priced at $3,495. The new pricing reportedly reflects more than a $600 reduction on the Model NHZ and a $900 reduction on the 40Z. All price changes are effective immediately.

Televideo Systems
P.O. Box 49048
550 E. Brokaw Road
San Jose, Calif. 95161
408-954-8333

Panasonic Communications & Systems Co. has introduced an MS-DOS handheld computer.

The JT-780 weighs 18 ounces and measures 7.1 by 3.5 by 1.2 in. The unit features an eight-line backlit display, up to 1.5M bytes of random-access memory and interfaces for bar-coding, communications and printers, the company said.

Applications can be downloaded to the desktop to run on the JT-780 under MS-DOS, and the data-collection computer is priced from $2,295. Deliveries are scheduled to begin in August.

Panasonic
Mail Stop 7F-1
2 Panasonic Way
Secaucus, N.J. 07094
201-348-7139

Software applications packages

K-Talk Communications, Inc. has released Version 1.2 of Mathedit, the company's equation editor for users of Lotus Development Corp.'s Manuscript 2.1 word processing package.

The latest version reportedly allows users to create Manuscript equations without learning the product's equation language.

Mathedit is menu-driven and includes prompting messages and on-screen windows, the vendor said.

The product is priced at $149, and registered users can receive the upgrade for $25.

K-Talk Communications
Suite 100
50 McMillen Ave.
Columbus, Ohio 43201
614-294-3535

A computer-aided design software system that was designed to use optically scanned images and documentation for raster data management has been announced by American Imaging Services, Inc.

The Lunaseries reportedly consists of three modules: Lunalink for loading, decompressing and manipulating of raster images; Lunaedit for changes and additions; and Lunalibrarian, a user-definable database manager for image files.

The product is priced at $2,185 and runs on IBM Personal Computer ATs and compatibles.

American Imaging Services
2315 Luna Road
Carrollton, Texas 75006
214-484-3339

Frontline Systems, Inc. has announced Project Calc/Resources, an enhanced version of the company's Project Calc add-in package for Lotus Development Corp.'s 1-2-3 and Symphony spreadsheets.

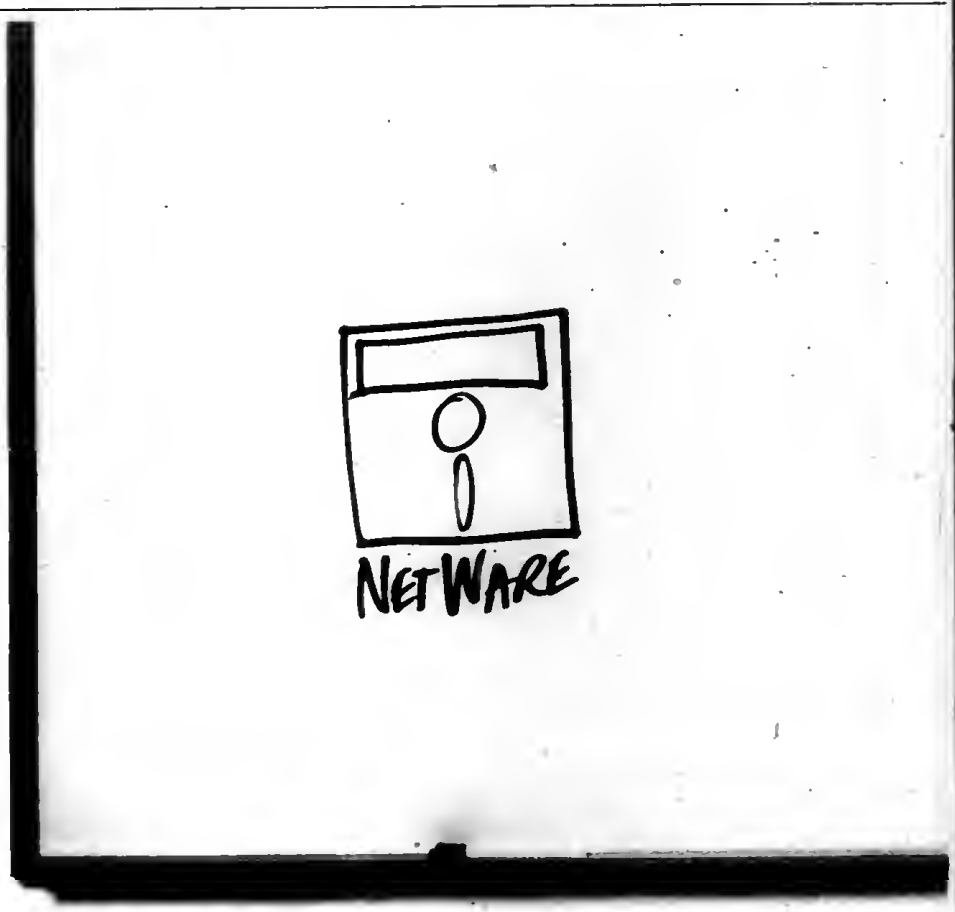
The latest release reportedly provides both project scheduling and resource management capabilities and supports any number of named resources, such as specific job categories or individual employees.

The program runs on IBM Personal Computers, Personal System/2s and compatible machines and requires a minimum of 640K bytes of random-access memory.

A hard disk is recommended by the vendor.

Project Calc/Resources costs $279.95.

Frontline Systems
Suite 100
140 University Ave.
Palo Alto, Calif. 94301
415-327-7297



Choose this,

Everyone's computing needs are unique. Which is why different people choose different solutions. And why so many diverse computing environments are being used today.

While this variety of solutions makes it easy for users to meet their needs, it presents some problems. Like sharing information between incompatible systems. The kinds of problems facing more and more companies as their information systems grow and diversify.

Novell means freedom. Fortunately, you can solve those problems by making one simple choice: Novell. Novell's NetWare® operating system software supports a myriad of computing environments.

That means you have the freedom to network everything from PCs to Macintosh, VAX to PS/2, 386 to mainframe host systems. So everyone can use the workstations they choose, without changing the way they work.

The power to choose. With NetWare, Novell gives you the most powerful combination of network performance, security,

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Software utilities

A software program designed to provide a multitasking environment between applications packages and the MS-DOS operating system has been announced by Proware, Inc.

Called PC-Mix, the software allows as many as three applications to run concurrently and permits the user to move from one task to another with only two keystrokes, the company said. It requires 40K bytes of memory and is available in both 5¼- and 3½-in. disk formats. PC-Mix costs $49.95.

Proware
Suite 100
10719 Plano Road
Dallas, Texas 75238
214-349-3790

Pathfinder Data Systems, Inc. has introduced a utility program for Ashton-Tate Corp. Dbase-compatible software users.

Pathmate allows Dbase-compatible users to create database files and browse, edit, add and delete records in up to eight related files concurrently. Global search and replace options are also provided.

The program is scheduled to ship this month and will carry a price tag of $99.95. It requires an IBM-compatible computer and a hard disk.

Pathfinder Data Systems
2104 Oak Ave.
Manhattan Beach, Calif.
90266
213-546-6333

Lasergo, Inc. has released Goscript 2.1, the latest version of its Goscript printing utility software for the IBM Personal Computer, XT, AT, Personal System/2 and compatibles.

Enhancements reportedly include print-to-disk capabilities, faster bit-map image processing and the ability to save and restore bit-map images. The product is available in two versions: a high-quality scalable 13-outline font edition, priced at $195, and a 35-outline font configuration priced at $395.

Lasergo
Suite A
9235 Trade Place
San Diego, Calif. 92126
619-530-2400

Macintosh products

A software security product for Apple Computer, Inc. Macintosh computers has been introduced by Transfinite Systems Co.

Dubbed Ft. Knox, the program reportedly provides commands for sanitizing files and disks, as well as file encryption and decryption functions. All types of files can be encrypted and decrypted based on a user-provided file key password, the vendor said.

The package will run on current Macintoshes from the 512K and up. However, not all features of the program are available on the 512K and 512KE machines. Ft. Knox costs $195.

Transfinite Systems
P.O. Box N
MIT Branch Post Office
Cambridge, Mass. 02139
617-969-9570

Synex has released Version 4.1 of Macenvelope, the company's envelope printing software for the Apple Computer, Inc. Macintosh.

Additional features reportedly include label printing, a preview screen, tab-delimited file functions and more than 50 predefined layouts for labels and envelopes. The package costs $89.95.

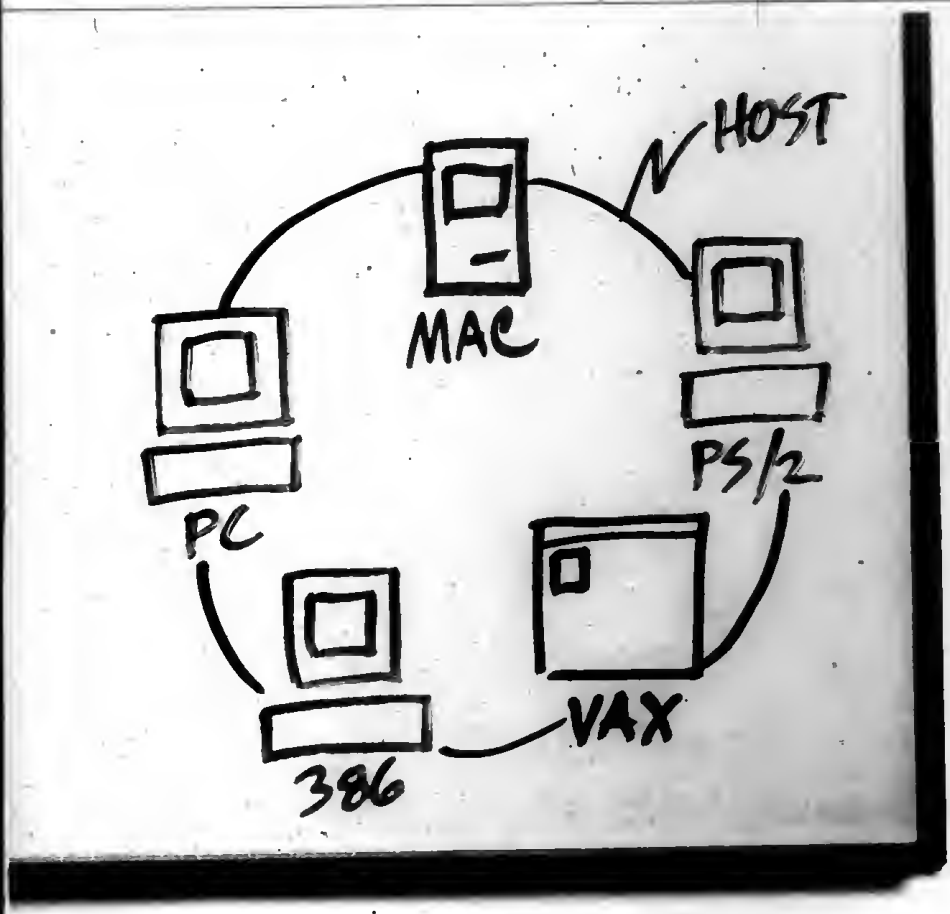
Users of Version 4.0 may upgrade to 4.1 by returning their original disk and sending $5.00 for shipping and handling charges, the vendor said.

Synex
692 Tenth St.
Brooklyn, N.Y. 11215
718-499-6293

E-Machines, Inc. has introduced the T19 SE/30, a large-screen color display for the Apple Computer, Inc. Macintosh SE/30.

Scheduled to ship in early August, it will provide users with a 19-in. display modified to show a 1,024- by 808-pixel format with 72Hz refresh rate. The screen includes control-panel software and 256 displayable colors. T19 SE/30 will cost $6,195.

E-Machines
9305 S.W. Gemini Drive
Beaverton, Ore. 97005
503-646-6699



and you can choose all of these.

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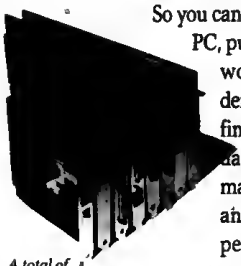

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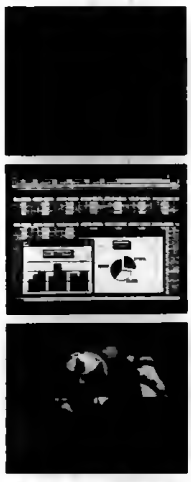

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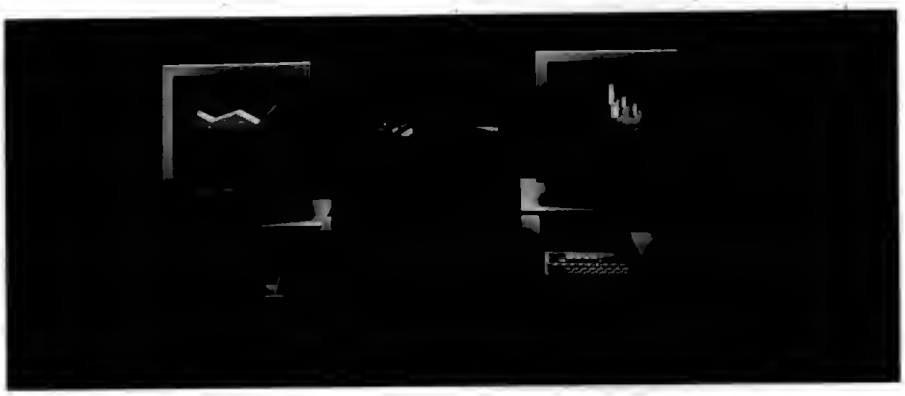

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DATA STREAM

Tony Friscia

Message for MAP success

The Manufacturing Automation Protocol (MAP) has had an uphill struggle to win broad user acceptance, but help may be on the way from unexpected quarters.

MAP sales last year were sluggish at best, and while there should be a surge of interest in certain quarters this year, users are still putting off installation while they wait for broader availability of products based on the latest version, MAP 3.0.

As a comparatively new kid on the block, MAP's success until now has depended on displacing entrenched protocols such as Decnet and IBM Systems Network Architecture (SNA) — which means convincing users to abandon a current networking strategy in favor of a new direction.

In manufacturing opera-

Continued on page 58

Inside

- Baytec launches a no-hassle SCSI-based network. Page 54.
- Archrivals battle for LAN-to-LAN connectivity market. Page 55.

Ace is the place for new net

ON SITE

BY ELLIS BOOKER
CW STAFF

OAKBROOK, Ill.— Huge retailers such as K Mart Corp. now stock hardware items such as hammers, glue and garden supplies. That may be good news for handy home-owners but not for hardware chains, which fear their dealers' businesses could be whittled down by the competition.

Ace Hardware Corp., for one, is fighting back by giving its retail store operators better and more timely information.

The company, which posted $1.5 billion in sales last year, is now completing a pilot test on IBM's Information Network, a value-added network service that will provide protocol conversion and X.25 connections for 5,200 dealer-owned Ace retail stores nationwide through the corporation's IBM 3090 Model 200E located here.

Ace's Schuman *aims to put all dealers on-line*

According to Don Schuman, Ace's director of information services, the six-month test of the dealer network — known as Acenet — began in January and has involved the following applications: inventory check, electronic mail, special purchase requests and access to fast-changing prices on commodity items such as lumber.

"The initial goal is to put all the dealers on-line so they can look at inventory," Schuman said. But the ultimate goal includes electronic data interchange (EDI) applications to connect Ace dealers, the corporate office and Ace's 4,000-plus suppliers, he said. Although no time frame has been set for this, the firm's corporate management is already sending purchasing information to several of its key suppliers using the electronic mail component of Acenet.

IBM Information Network offers EDI services based on ANSI X12. With the Acenet trial wrapping up, Schuman said Ace is still evaluating EDI alternatives, including continued participation in the Eagle System, a 5-year-old, non-X12 EDI run by Sterling Software, Inc.

However, Schuman said only 90 to 100 Ace suppliers use

Continued on page 59

LANs predicted to join high-fiber generation

BY ELLIS BOOKER
CW STAFF

BOSTON — Fiber optics increasingly will be the transmission medium of choice for local-area networks, growing from 2% today to 23% of all LAN cabling by 1992, according to a recent study by The Yankee Group, a market research firm here.

Along with fiber, twisted-pair wiring will erode the current market dominance of coaxial cable, according to the study, which surveyed the LAN strategies of 170 users.

However, fiber will not wind its way to many desktops, according to the report. Instead, most desktops will be wired with twisted-pair cable connected to a fiber backbone network.

The problem with fiber and coaxial cable for desktop connections is that both media are expensive to install, and "every time you move something, you have to add a new connection," said Yankee Group Director of Communications Research Gigi Wang.

In contrast, twisted-pair wiring already exists throughout most buildings, she added. Users will increasingly install fiber-based backbones as the Fiber Distributed Data Interface standard matures.

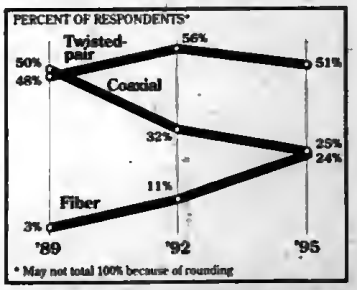
Network management is a top concern among users who are on the lookout for enterprisewide LANs, the study found.

"The enterprisewide LAN evolution has given new emphasis to the importance of network management, since problems impact a wider user community with greater consequence," Wang added.

The Yankee Group said the path to heterogeneous, enterprisewide networks rests on adherence to the Common Management Information Protocol network management standard under development by the International Standards Organization.

Fiber shines as coaxial fades

Of 170 medium-to-large companies surveyed, all said they plan to connect workstations over twisted-pair cable to fiber-optic backbones



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Baytec net adds speed, subtracts OS

BY PATRICIA KEEFE
CW STAFF

LIVONIA, Mich. — Baytec, Inc. recently introduced a small computer systems interface-based hardware platform that the firm claims is the first network not to require an operating system.

Essentially a server and gateway in one, the Baytec 2000 has so far attracted users who need massive data storage and extremely high-speed data transfer — often between incompatible computer systems — but do not want the hassle of managing a full-blown network.

The system reportedly can reach speeds up to 200M bit/min., depending on the type of cabling used and the distance involved. Pricing starts at $16,995 per server, and node interfaces are $495.

"This really is a different animal" from conventional networks, said Robert Kniskern, president of Adaptive Micro-Ware, Inc. in Fort Wayne, Ind. An early user, Kniskern described the Baytec 2000 as an intelligent I/O manager. "Once a connection is established, as far as the PC user is concerned, he has a direct line" to whatever he is communicating with, he said.

Kniskern said the Baytec concept reflects a similar trend in the minicomputer arena. "Instead of adding another disk drive to the VAX, users are adding intelligent managers instead," he said.

The computer-aided design and manufacturing (CAD/CAM) industry, with its huge files and heavy processing demands, is the initial target market. CAD is both very data- and memory-intensive, and most network operating systems take up a significant amount of random-access memory, Kniskern explained. "We'd asked for as fast as possible speed for data throughput to receive and send files."

"With our system, by transferring the overhead off the desktop and out into an active switching device, it really frees up the direct memory access and hardware."

Kniskern singled out systems that have a heavy database access requirement as prime candidates for the Baytec 2000. He noted the airline reservation industry, which typically has a lot of interaction between intelligent nodes from different companies using different file formats and trying to access the same database system. "In that situation, the network has to be very interactive," Kniskern said.

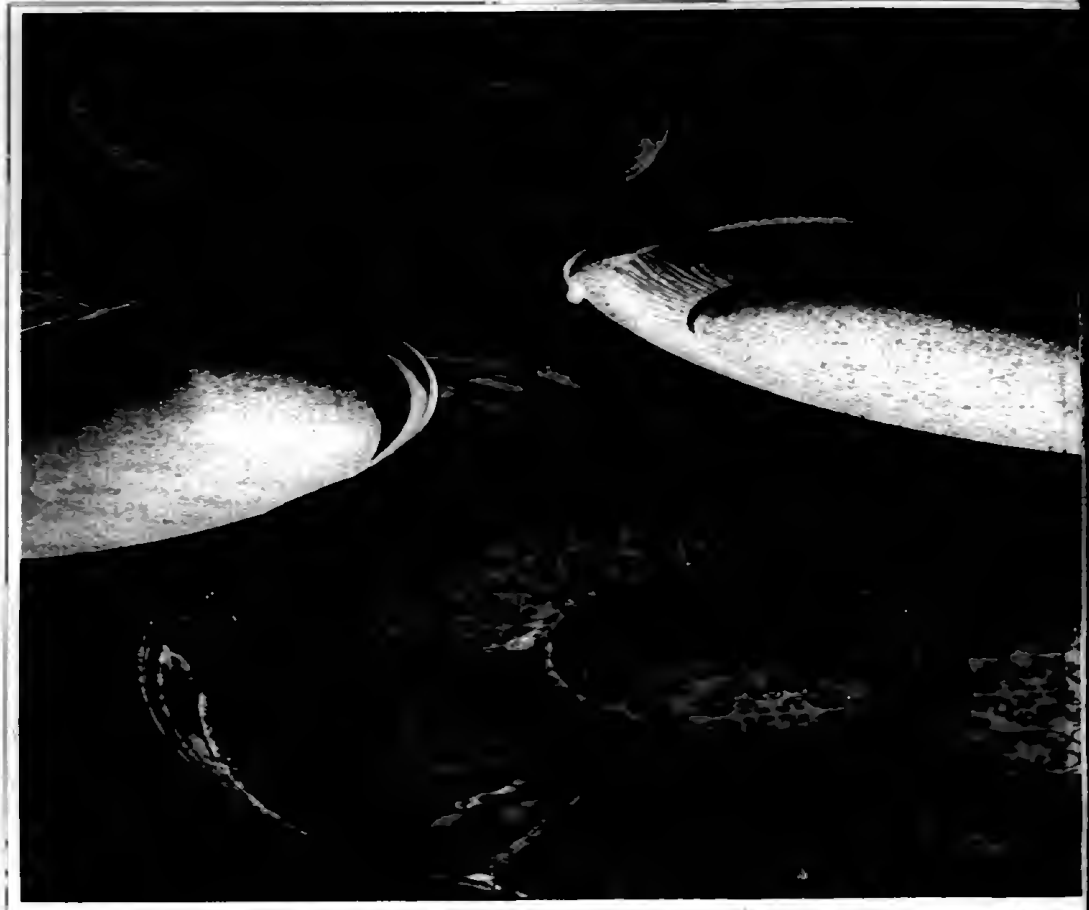
The Baytec 2000 requires attached systems to support the SCSI. If the users don't have it, Baytec will supply it, said Baytec President John Strunk. Also required is support for one of Baytec's operating system drivers, which include ones for DOS, Unix, Xenix and Apple Computer, Inc.'s Macintosh system.

Baytec's box acts as a gateway linking workstations and personal computers to minicomputers and mainframes, as well as local- and wide-area networks. Software independence eliminates the need for upgrades to keep up with changes in workstation or host operating systems. The system is completely Open Systems Interconnect-compatible, Baytec added.

Up to 9G bytes of 8-in. disk capacity enable users to store data centrally or pass it on to another node on the system.

The server supports up to 54 users, and base units reportedly can be daisy chained to support up to 3,000 nodes. A high-speed multimedia cable interface supports dual coaxial, fiber-optic and twisted-pair wire. Other features include a high-capacity printer and plotter spooler and tape-backup systems, system management and data access control utilities.

The need for programming expertise or user training is minimal, Baytec claimed, since set-up, password security and data access controls are menu-driven. Installation is said to be similar to installing an external disk drive.



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Combatants take distinctive paths in LAN-to-LAN contest

BY ELISABETH HORWITT
CW STAFF

Two archrivals have launched efforts to stake out the LAN-to-LAN connectivity market — but from slightly different angles. Both Cabletron Systems, Inc. and Synoptics Communications, Inc. announced offerings to interconnect and manage multiple local-area networks; however, Cabletron is targeting remote T1 links between LANs, while Synoptics is going for local LAN interconnections.

Synoptics recently unveiled Network Utility Architecture, a product strategy designed to locally interconnect and manage a variety of LANs, eventually including systems complying with the CCITT 802.3 Ethernet, 802.5 Token-Ring and Fiber Distributed Data Interface (FDDI) standards, the vendor said.

Synoptics also announced System 3000, a "platform that will support all of our future [LAN] products," according to Synoptics spokeswoman Beverly Barnett Ristow. "The whole concept is to provide a central point for controlling and managing multiple LANs from one box, one wiring closet."

However, the first release of System 3000 provides bridging only between Synoptics' Lattisnet family of Ethernet LAN products as well as proprietary network management for the LANs and bridges at physical and data link layers, Ristow said.

Synoptics plans for the System 3000 to support and interconnect Token-Ring LANs by year's end or early next year, Ristow said. By that time, the vendor also plans to provide support for three major network management protocols: Common Management Information Protocol, which is part of the Open Systems Interconnect suite; IBM's Netview; and Simple Network Management Protocol, used to manage Transmission Control Protocol/Internet Protocol (TCP/IP) networks.

Synoptics plans eventually to support the FDDI standard for fiber-based LANs but has set no release date as yet, Ristow said. The standard is still incomplete and too expensive to implement, she added. Synoptics also has released a statement of direction for interconnecting Token-Ring to Ethernet. The company has made no official statement about a future remote LAN bridge product.

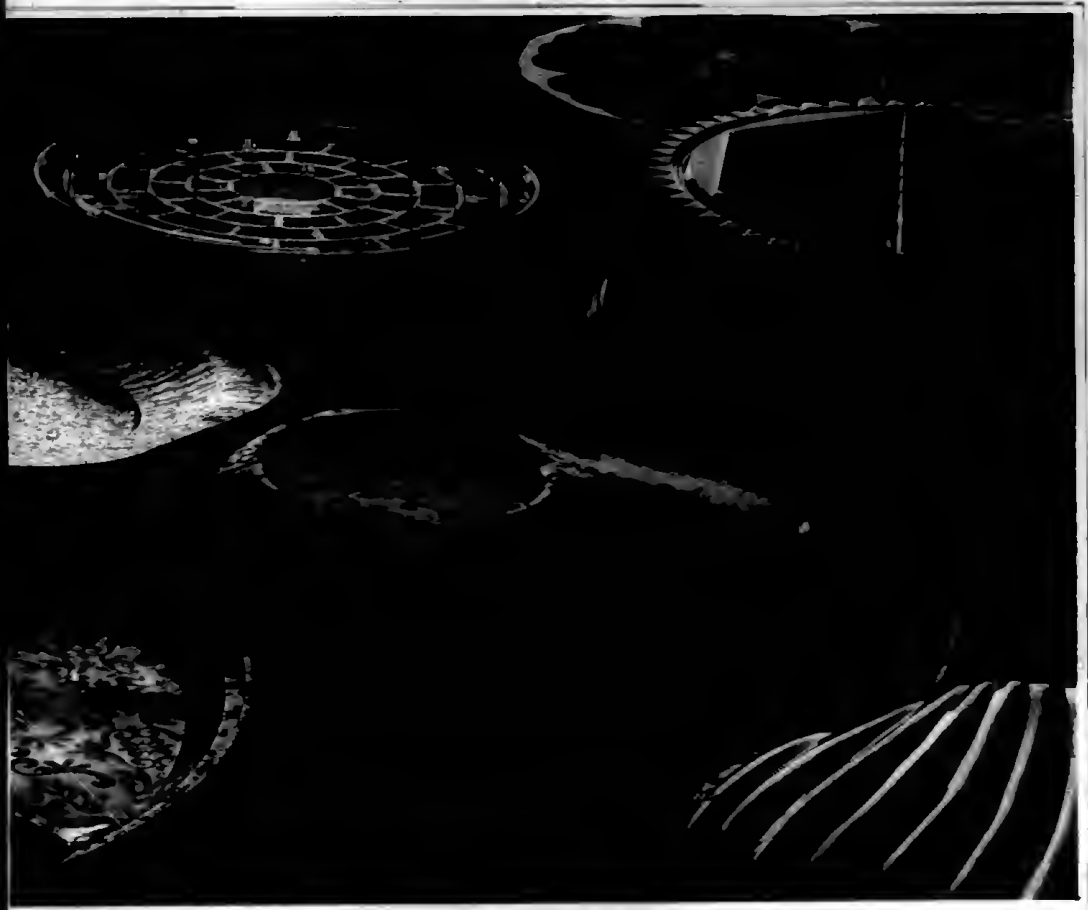
CABLETRON IS targeting remote T1 links between LANs, while Synoptics is going for local LAN interconnections.

This, however, is Cabletron's latest direction. The company has reportedly extended its Lanview Network Management and Control Solution to wide-area links with the announcement of an Ethernet-to-T1 bridge and integrated management software.

The NB35 Ethernet-to-T1 bridge reportedly filters 14,000 packets per second and forwards at a rate of 2,600 packets per second to link local-area networks across private DS1 lines. It reportedly uses adaptive learning and the IEEE 802.1 spanning tree algorithm to select the most efficient route to the right address across a complex, multisite wide-area network.

Support for TCP/IP is said to allow the bridge to pass management information and control commands through third-party routers and gateways. The bridge is priced at $14,900 per pair and is scheduled for shipment next quarter.

Cabletron also announced an upgrade to its Remote Lanview Network Management and Control Solution, which is said to enable the product to manage the new T1 bridges. The software upgrade is priced at $995.



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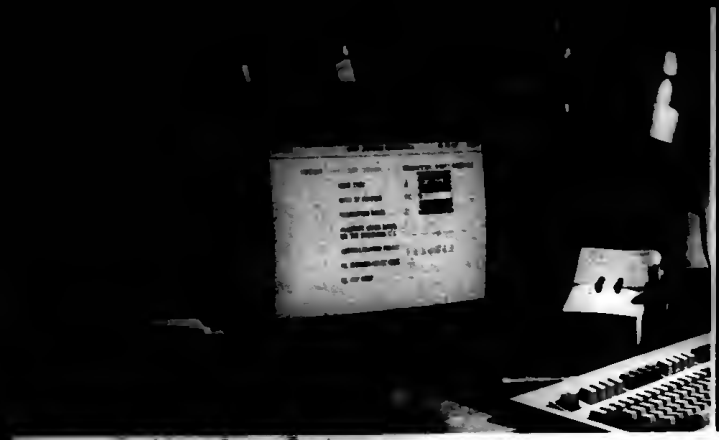

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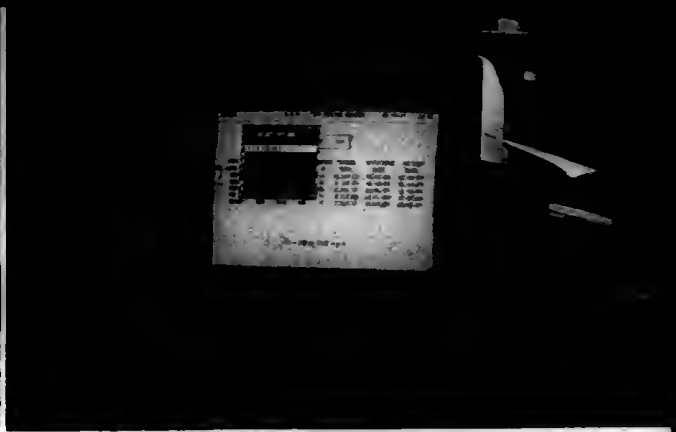

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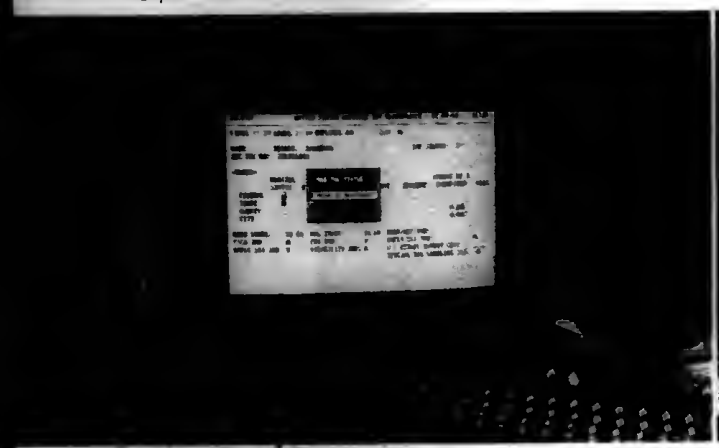

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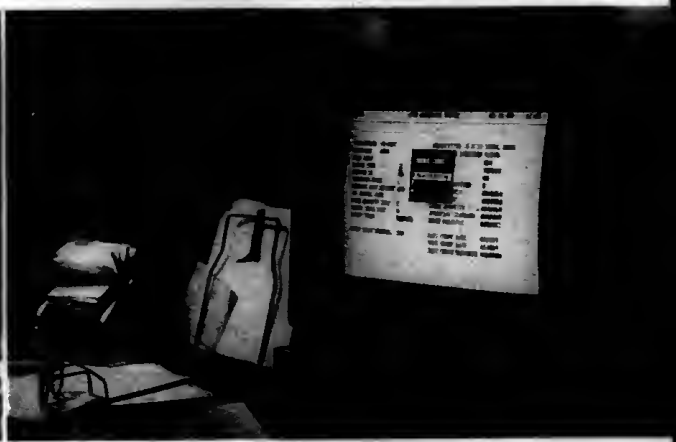

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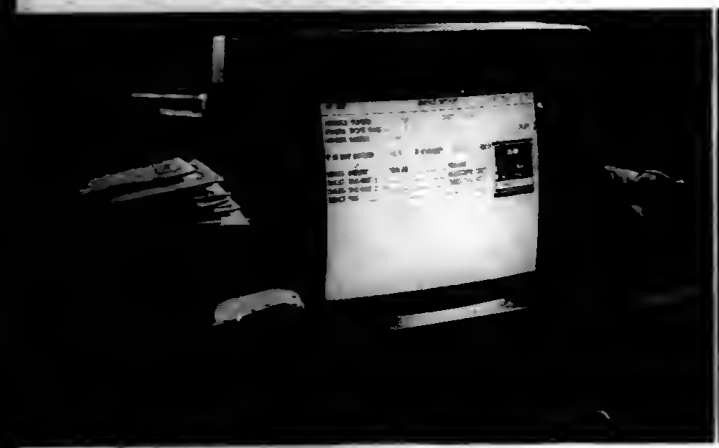

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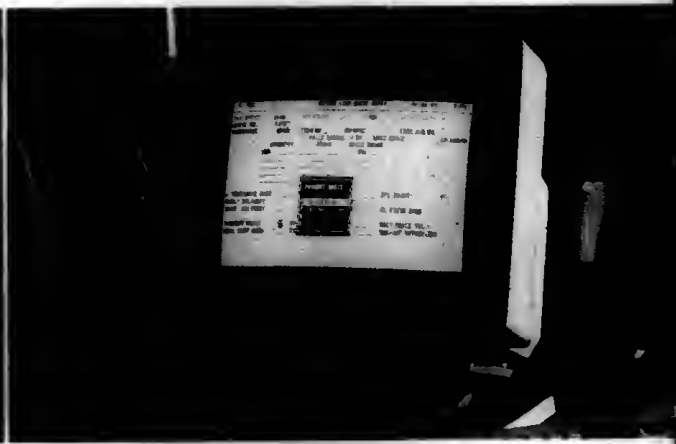

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Friscia

CONTINUED FROM PAGE 53

tions, site standards are as important as "industry-acknowledged" standards. This fact makes VAX/VMS, Decnet and SNA standards for most manufacturing users. This does not mean an allegiance to any vendor but rather an absolute commitment to "sunk cost."

That is why the key to MAP's growth will be one element of the MAP suite: Manufacturing Message Service (MMS). MMS has strong potential for becoming the preferred application programming interface for computer-to-controller communications. It should be noted, however, that MMS will be used only in new installations. For computer-to-controller communications, users will not rewrite applications to fix what ain't broke.

Popularity

MMS already has become so widely accepted that my company, Advanced Manufacturing Research (AMR), expects to see vendors offering it on top of non-MAP networks, such as Decnet and Transmission Control Protocol/Internet Protocol. Once this happens, users will be able to migrate their favorite applications from an existing network base to MAP — or use the same applications across a variety of lower-level networking protocols such as MAP, Decnet, TCP/IP or Allen-Bradley's Data Highway — without having to rewrite the application.

The user's need for intracell multivendor connectivity can thus be achieved while preserving the all-important installed base. Companies would be able to run their applications on whatever low-level networking protocols best suit the needs of application and users: broadband, baseband, fiber or twisted pair; Ethernet, MAP's Token Bus or Token-Ring. Taking any of these options away from the user would limit the amount of support for the MAP standard.

Ultimately, AMR would like to see MMS become an application service available on any Open Systems Interconnect-based network — not just the 802.4 MAP subset of OSI, which is now the case. This would greatly broaden the range of devices to which applications could migrate via MMS.

What really needs to happen is for the federal government to make MMS part of the Government OSI Profile (GOSIP). Approved as a Federal Information Processing Standard in August 1988, GOSIP went into effect on Feb. 15. An 18-month grace period is now in progress, during which government agencies are expected to migrate to the OSI specifications that GOSIP lays out. Implicit in that grace period is a message to vendors: Get your products to comply with the GOSIP version of OSI if you want to continue selling to government agencies.

Becoming part of GOSIP could help establish MMS as a bridge between OSI, MAP and leading proprietary protocols such as Decnet. It could also put some much-needed pressure on vendors to migrate their proprietary factory floor networks to OSI.

Right now, many vendors are accomplishing migration at their own, often slow, pace. AMR does not believe that intermittent pressure from the manufacturing community will speed OSI protocols onto the factory floor.

GOSIP could make the difference, since it has the support not only of the federal government, with its immense buying power, but also of the Department of Defense, which is urging GOSIP compliance on its major contractors. If MMS becomes part of GOSIP, vendors will be encouraged to deliver MAP-based factory floor networking as part of an overall, enterprisewide OSI solution.

Supporting both MAP and OSI, and strengthened by inclusion in GOSIP, MMS could help bring about convergence of the two worlds, which AMR has been calling M/OSI.

If all goes well, AMR predicts that M/OSI should blossom in the 1991-1992 timeframe.

Friscia is president of Advanced Manufacturing Research, a Salem, Mass.-based research and consulting firm.

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Ace

FROM PAGE 53

Eagle, adding that the original EDI service was set up before the X12 EDI standard and "has not been well-received" by the industry. He notes that although Eagle is supposed to automate the order-entry process, some Ace vendors pull incoming EDI orders off-line and then type them back into their host computers in proprietary formats.

Acenet users will be able to access the IBM Information Network using either an IBM-compatible personal computer and a 2,400 bit/sec. modem or an IBM 3151 terminal, which Ace will rent to the store for $25 per month. Dealers will be charged a monthly support fee of $22, which will include a toll-free Help line, for using Acenet, Schuman said.

"The advantage of the IBM network is it can attach to either dumb terminals or personal computers," he said. PCs have the added advantage of being able to run accounting or other productivity software in the back office, Schuman noted.

About 15 people in Ace's 150-person IS operation will be involved in developing new applications for the network. Ace hopes to add 1,000 dealers to the network by the end of the year and have all the stores on-line within three years, he said.

The IBM 3090 200E in the corporate office runs MVS/XA, but a move to MVS/ESA, with its promise of better throughput, is planned soon, Schuman said. A DB2 pilot was begun recently, and DB2 is a future possibility, but dealers currently look at the database through IBM's IMS.

Likewise, because most of the applications software at Ace — including the electronic mail system at the heart of Acenet — is homegrown IMS, the company elected to use IBM 9370s for distributed processing at its 14 retail support centers.

"The hardware industry is years behind the grocery industry with scanning at the checkout," Schuman noted. Thus, one future project is scanning and point-of-sale systems.

Ace has a pilot program to get bar-code data from its suppliers, associating a standardized bar code on a product package with its inventory number.

Confronting department store chains with their ubiquitous "home centers" (read, hardware centers), Schuman concludes: "Computerization at the dealer level is important to stay competitive."

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*Datapro, *User Ratings of Network Management Systems*, September, 1988.
**International Data Corporation (IDC), *Quantitative Analysis of the Network Management Market*, October, 1988.

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AT&T boosts Starlan reach

BY ELISABETH HORWITT
CW STAFF

AT&T recently announced a plug-in extension card for its 6300 WGS family of IBM Personal System/2 compatibles. The card reportedly extends AT&T's Starlan 10 fiber-optic network to the user's desk. Priced at $995, the Starlan 10 PC Fiber Network Access Unit is said to extend the maximum distance between a user's desk and the wiring hub to two kilometers.

Community College of Rhode Island is considering implementing Starlan 10 but has no real need for all-fiber links out to the workstation, according to Richard Sundberg, director of the college's department of computer resources.

The college currently runs data communications over a fiber-optic network of AT&T Information Systems Network switches, connecting workstations over twisted-pair wiring to a concentrator that is capable of supporting up to 40 devices, Sundberg said. The concentrators are then connected over fiber. The distance limitations between the concentrator and the workstations "are no problem; [twisted-pair wiring] works very well," he said.

AT&T also announced Mail Exchange Release 2.2 for its 3B line of minicomputers. The release provides support of Simple Mail Transfer Protocol, enabling users to exchange mail with other users of the Transmission Control Protocol/Internet Protocol mail system.

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BIT BLAST

IBM, CSI unwrap DOS messaging application for Officevision/2

IBM announced it will remarket Consumer Software, Inc.'s (CSI) Network Courier electronic mail package in the U.S. and Canada. The two vendors recently announced a DOS-based messaging application for IBM's Officevision/2 system. CSI incorporated IBM's Systems Application Architecture into a customized version of its Network Courier to give DOS workstations access to Officevision/2's E-mail capability.

Metropolitan Fiber Systems, Inc. has announced fiber-optic networks that will provide an alternative to local Bell operating company services in three major U.S. cities. Within the past month, the Oakbrook Terrace, Ill., vendor has completed its Baltimore network, started construction on its Dallas network, which is slated for 1990 operation, and won the first permits to provide a Los Angeles network.

Inet Hong Kong Ltd., a joint venture company between a Canadian and a Hong Kong firm, has announced a service said to allow IBM Personal Computer users in North America and Hong Kong to exchange files, send via telex and facsimile and access global business information.

Network Computing Devices, Inc. (NCD) and Tektronix, Inc. are working together to develop future X Window System-based display stations. In a three-year OEM deal valued at more than $12 million, NCD will supply Tektronix with a version of its X Window products.

Wang Laboratories, Inc. subsidiary **Intecom, Inc.'s** Integrated Business Exchange private-branch exchange system recently passed a compatibility test with **AT&T's** Integrated Services Digital Network Primary Rate Interface service, according to the company.

The **Communications Product Division of Microwave Modules & Devices, Inc. (MMD/CPD)** recently announced plans to develop militarized versions of **3Com Corp.'s** local-area network products. A licensing agreement provides access to 3Com's specifications so that MMD/CPD can provide the military with IEEE-compatible LANs that are MIL-E- and Tempest-compatible.

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PC Magazine, 10/31/88

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NEW PRODUCTS

Local-area networking software

Digital Equipment Corp. has announced a new version of its PC Integration software and price reductions for its PC Ethernet network adapters, the company said.

Version 2.2 of VAX/VMS Services for MS-DOS Server software and Decnet/PCSA Client software are said to provide enhanced features for access to network applications, PC mail and system management functions. VAX/VMS Services Version 2.2 is licensed with Decnet-VAX systems at no additional cost. The Decnet/PCSA Client software is priced at $250 for a single-user license.

The DEPCA Ethernet controller and Network Integration Packages are reported to cost 33% to 44% less than previous prices, with prices now ranging from $395 to $845. The products were designed for personal computer users who want to integrate PCs from various vendors into a Decnet/OSI PC LAN environment, according to the vendor.

DEC
146 Main St.
Maynard, Mass. 01754
800-344-4825

Madge Networks Ltd. has introduced Smart IPX/SPX LAN Support software for the company's Smart AT and MCA Token-Ring Nodes running under Novell, Inc.'s Netware 2.1 and higher.

The support software will reportedly save 20K bytes of DOS memory by downloading the IPX/SPX transport protocols — usually part of Novell's host-resident software — directly onto Madge Networks' Smart Token-Ring Nodes. The IPX/SPX LAN support software will be offered to existing owners of Madge Smart Token-Ring Nodes at a nominal charge, according to the company. The nodes are priced from $795 to $895 and include installation utilities, Netware drivers and diagnostics.

Madge Networks
534 Salem Ave. S.W.
Roanoke, Va. 24016
703-982-0638

Automated Design Systems, Inc. has expanded its family of Windows Workstation local-area networking software products, the company said.

The package, called Windows Print, reportedly brings full-function network printing capabilities to the Microsoft Corp. Windows environment. The utility currently offers support for Novell, Inc.'s Netware and includes on-line customizable Help facilities. According to the vendor, Windows Print is priced at $695 for an unlimited-user, single-file-server license.

Automated Design Systems
Suite 830
1000 Abernathy Road
Atlanta, Ga. 30328
404-394-2552

Network services

AT&T has introduced a wider choice of transmission speeds for its dedicated Dataphone Digital Service, the firm said.

An intermediate data rate of 19.2K bit/sec. has reportedly been added to the vendor's Dataphone Digital Service, which now offers a subrate data multiplexing feature that gives users the option of handling multiplexing functions at AT&T serving offices, the company said.

Monthly pricing for 19.2K bit/sec. circuits between AT&T network-serving offices ranges from a fixed rate of $87.57 plus $3.40 per mile for circuits 50 miles or less to $389.69 plus 38 cents per mile for circuits covering more than 500 miles, according to the vendor.

AT&T
295 N. Maple Ave.
Basking Ridge, N.J. 07920
800-222-0400

Links

Intel Corp. has announced that its Fastpath applications are now available for Digital Equipment Corp. Decnet users.

According to the company, Decnet users can utilize Fastpath to communicate with an IBM mainframe as if it were connected directly to the network. The product reportedly allows Decnet users to view the IBM mainframe as a peer for data resource sharing, full-screen terminal emulation, tape archiving and electronic bridging functions.

Intel's Fastpath Decnet support is scheduled to be available in August, with pricing per node ranging from $1,100 to $26,000, depending on the application. Hardware connection list prices will start at $42,000.

Intel
2402 W. Beardsly Road
Phoenix, Ariz. 85027
602-869-4828

Proteon, Inc. has entered the X.25 market, announcing internetworking support for X.25 public data networks, as well as future support for the Defense Data Network X.25 standard. The P4221 X.25 interface reportedly works in conjunction with Proteon's existing P4200 router, letting users employ X.25 to link diverse local-area networks, such as Ethernet and Token-Ring.

The P4221 dual-port X.25 interface costs $3,900 and uses Transmission Control Protocol/Internet Protocol to allow networks to exchange data, the vendor said.

Proteon
2 Technology Drive
Westboro, Mass. 01581
617-898-2800

Microsystems Engineering Corp. has introduced the MASS-11 Fax Processor, a software program that allows users to send facsimile messages directly from a Digital Equipment Corp. VAX-connected terminal, the company said.

The product reportedly works in conjunction with Biscom, Inc.'s Faxcomm 1000 Plus, a hardware unit that attaches to DEC VAXs.

The facsimile software will be priced from $995 to $2,875, depending on VAX configuration.

The Biscom hardware is priced at $3,695.

Microsystems Engineering
Suite 400
2400 Hassell Road
Hoffman Estates, Ill. 60195
312-882-0111

MANAGER'S JOURNAL

EXECUTIVE TRACK

Irving P. Hammer has been promoted to vice-president of MIS at **Montgomery Ward & Co.** in Chicago. He was formerly director of computer services, a position he held for seven years.

Hammer, 54, reports to Tom Cato, senior vice-president of logistics. Hammer is responsible for merchandise, financial, store and distribution systems development, information systems and personal computer activities.

Hammer joined Montgomery Ward in 1961 as a credit management trainee. He transferred to the systems division in 1966 and held various operations assignments, including corporate information processing manager.

Hammer holds a bachelor's degree from the University of Missouri. He is a member of the North Shore Data Processing Managers Association.

.....

Laurie J. Daniels has been promoted to vice-president of U.S. information services at **Bramalea Ltd.**, a Toronto-based real estate development firm. Daniels, 35, is based in Denver and was previously director of U.S. information services.

In her newly created position, Daniels is responsible for computer operations, systems development and client support in Bramalea's seven U.S. offices and its Coseka Resources Ltd. subsidiary.

Daniels holds a bachelor's degree from the University of Notre Dame and a master's in public administration from the University of Denver.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor-Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

A new hook for systems integration

Top execs and division managers are rolling up their sleeves and getting more involved

BY DAVID A. LUDLUM
CW STAFF

When Baxter Healthcare Corp.'s Caremark home health care division hired a Big Eight accounting firm in conjunction with a systems integration project earlier this year, Caremark's general managers — not its information systems professionals — called the shots.

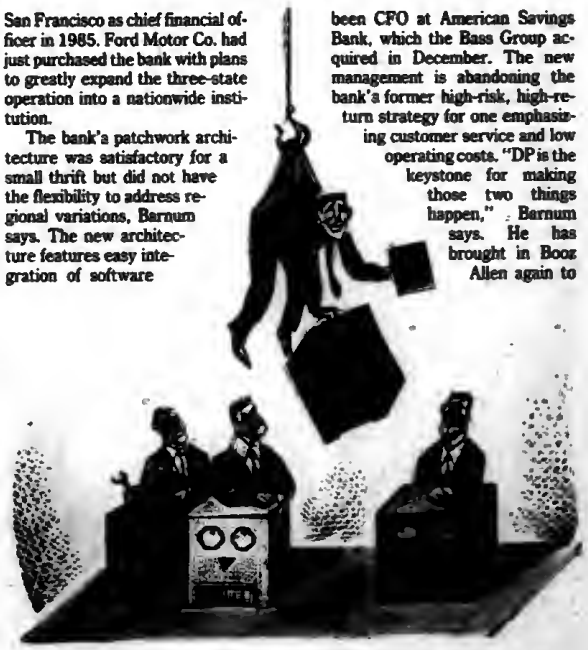
The project illustrates two factors that many say are leading general managers to take tighter control of systems integration projects — decentralization and the strategic value of systems.

The home health care division is relatively decentralized because its services differ from Baxter's core business of hospital products. IS is crucial to the division because of its dispersed offices, administration of medicine and third-party billing, among other factors. So it was Caremark's general managers who steered efforts to deploy relational databases and a more distributed systems architecture, says Michael S. Heschel, Baxter's corporate vice-president of information resources.

Similar considerations are leading upper management, particularly operations managers, to become more involved with systems integration projects throughout corporate America, Heschel adds.

Robert Barnum, chief financial officer of American Savings Bank in Irvine, Calif., has twice taken charge of integration projects at savings banks undergoing a radical change in strategy, Barnum called in Booz, Allen & Hamilton, Inc. for systems integration after joining First Nationwide Bank of San Francisco as chief financial officer in 1985. Ford Motor Co. had just purchased the bank with plans to greatly expand the three-state operation into a nationwide institution.

The bank's patchwork architecture was satisfactory for a small thrift but did not have the flexibility to address regional variations, Barnum says. The new architecture features easy integration of software packages along with a single transaction processing network for various hosts and numerous terminals and products. Along with hiring Booz Allen to help plan it, he installed a new IS management team to implement it.



BILL RUSSELL/REACTOR

"There was a whole process to elevate the role of IS from kind of back-office people who don't have anything to do with the business to high-level guys," Barnum says.

Since February, Barnum has been CFO at American Savings Bank, which the Bass Group acquired in December. The new management is abandoning the bank's former high-risk, high-return strategy for one emphasizing customer service and low operating costs. "DP is the keystone for making those two things happen," Barnum says. He has brought in Booz Allen again to evaluate the efficiency of processing and business practices and lay out plans for the availability and delivery of information and the distribution of processing.

Companies still hire systems integrators for the traditional reasons, such as tight deadlines in the face of development and maintenance backlogs, a lack of specialized in-house expertise and budgetary constraints on hiring

Continued on page 68

Are feds ready for a CIO?

BY MITCH BETTS
CW STAFF

The federal government needs a chief information officer, the former head of the information-intensive U.S. Bureau of the Census told a U.S. Senate hearing last month.

Congress gets lots of recommendations, but the CIO proposal was especially interesting because it was not made in the context of computer systems. Rather, it was made during a hearing on the quality of federal statistics.

Vincent P. Barabba, a former census director and now executive director of market research and planning at General Motors Corp., said a White House CIO is needed to coordinate the governmentwide policy on federal statistics. He said the CIO would address "our information needs, as well as how we collect, analyze and present relevant information."

ROBERT PIZZO

Barabba's proposal did not mention computers specifically, but it did closely track the original philosophy behind the CIO concept and its predecessor, information resources management (IRM). Under the IRM school of thought, information must be managed from the moment it is collected to the end of its life cycle, whether it is in a computer system or not [CW, June 6, 1988].

However, the appointment of a White House CIO will not likely happen any time soon. Previous proposals for a federal information systems "czar" have never caught on in the highly decentralized government. Each department has its own IRM office, with general guidance provided by the White House Office of Management and Budget, the General Services Administration and the National Institute of Standards and Technology.

Besides, the White House did not get a chief financial officer — a position with a long history in the private sector — until two years ago [CW, Aug. 3, 1987].

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All of which is nothing new to the thousands of VINES users who have been enjoying proven 386 performance for more than a year. But to those who are still waiting for NetWare to catch up, we'd like to offer this advice. It's never too late to shift gears.

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Heinz fuels outsourcing trend with Genix deal

BY CLINTON WILDER
CW STAFF

PITTSBURGH — H. J. Heinz Co. became the latest and one of the largest firms to join the outsourcing bandwagon last week, announcing a three-year, $15 million contract for Genix Corp. to take over virtually all of its IBM mainframe processing in the U.S.

Heinz will centralize the processing from its five U.S. business units and its corporate headquarters at Genix's large suburban data center here. Like other firms such as American Standard, Inc. and Copperweld Corp., Heinz will retain its applications development while the services vendor handles the processing [CW, May 29].

The contract grew out of Heinz' recent decision to consolidate much of its information systems function. The $5.2 billion food company considered building its own large corporate data center, but cost and other factors led it to choose an outside vendor, said Phil Lichtenfels, a senior consultant at Heinz and former director of computer resources st Westinghouse Electric Corp.

"There's no glory in running s data center these days," Lichtenfels said. "We saw s lot of risks in starting from ground zero, recruiting and training good people. If you can get someone that you have confidence in to run it for you, it just makes good business sense."

Each Heinz unit will retain its development staff and an unspecified number of data center employees to coordinate remote job entry to Genix. Lichtenfels refused to comment on how many IS employees will be cut or transferred to other jobs within Heinz. The firm plans to dispose of its IBM mainframes at each center, including one 3090, two 3081s and two 4381s. Genix employees will provide technical support to Heinz in both MVS and VSE environments.

Lichtenfels said the changes will allow Heinz to progress more quickly toward leading-edge hardware technology by taking advantage of economies of scale across its five divisions. "We'll be saving on hardware and operating systems software and want to start leveraging the sharing of applications," be said.

In connection with centralization at Genix, Heinz will also install s T1 voice and data network and an AT&T SDN voice network linking its five divisions by the end of the year. Genix will assist in that effort.

The five U.S. divisions account for $3.5 billion of Heinz's worldwide revenue. There will be no IS changes in Heinz's overseas operations, Lichtenfels said.

Garland takes chief IS post at EG & G

BY CLINTON WILDER
CW STAFF

WELLESLEY, Mass. — George Garland, a 17-year veteran of information systems management in the defense and electronics industries, has joined EG & G, Inc. as corporate director of IS.

Garland was most recently employed at Grumman Data Systems in Bethpage, N.Y., as director of systems planning and development for the past three years. He replaces Philip Leibold, who was promoted earlier this year to general manager of the EG & G division supporting the federal government's supercollider project in Austin, Texas.

EG & G is a highly diversified, $1.4 billion technology firm with 55 autonomous divisions worldwide. Its businesses range from geophysical instrumentation systems and electronic components to technical and field support for major Department of Energy and Department of Defense projects.

Garland's responsibility is to set standards for all of the divisional IS departments and approve IS acquisitions corporationwide. He reports to EG & G Chief Financial Officer Richard P. Delio.

"I'm responsible for everything from PCs to Crays," Garland said. "My biggest challenge now is to gain an understanding of the company and ensure that its growth and acquisition needs are met by my organization." EG & G acquires three to four new divisions each year, Garland said.

Garland will be returning to his New England roots for the first time in several years. Before Grumman, be worked 14 years at General Electric Co.

Garland directs an IS staff of 20 at EG & G corporate headquarters here. "We're primarily s consulting and service organization for the divisions," be said. "This is s great opportunity for me to work with 55 divisions and direct all of the corporate support activities."

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New hook

FROM PAGE 63

additional employees.

However, decentralization and the strategic value of IS is reshaping some of the corporate decision making on systems integration projects, consultants and managers say. Decentralization may leave no choice but to bring in an outside firm for a systems integration project because it often forces a reduction of in-house capabilities, says Paul Berger, an independent consultant in Lawrenceville, N.J. Subsidiaries, divisions and departments often cannot justify in-house staffs for specialized work such as a corporatewide organization.

Barnum says *outsiders give a fresh outlook*

"When you start to move people out, you do away with the critical mass," Berger says.

Even when decentralized organizations retain centralized staffs for such complex work as systems integration, decisions on the work may rest with a department manager, and he may prefer an outside firm to "the corporate guys coming in and telling him what to do," says John Connell, executive director of the Office Technology Research Group in Pasadena, Calif.

The Ledgeway Group, a Lexington, Mass., market research firm, predicts departmental managers will assume greater responsibility for hiring systems integrators and other purveyors of contract services. Last year, departments controlled 33% of such decisions, and IS units claimed 67%.

However, Ledgeway projects that by 1990, the split will shift to 36% and 64%, according to the firm's survey of 178 Fortune 1,000 companies.

"Information systems are playing a more critical role in the departments' operations; therefore, they want to take greater charge," says Jeff Kaplan, Ledgeway's director of networks and professional services.

Systems projects that underlie shifts in corporate strategy are more likely to involve top corporate managers in the hiring of a systems integrator, says Todd Hixon, a vice-president at Boston Consulting Group, which recently studied the systems integration market. IS can be crucial to realigning a company's strategy from a product orientation to one on customers or to the integration of subsidiaries focused on individual countries, Hixon says.

"As these systems problems evolve, the organizational level at which the decision is made is moving up beyond the MIS department," Hixon says. Where IS executives might be more inclined to use available resources or build new capabilities, top management may want "to bring in new talents and new ideas or use the same guys that worked for a competitor," Connell says.

Barnum agrees. "Systems groups usually have a lot of pride of ownership in what they've got. It's usually very difficult to get inside systems people to say we've got to do something differently," he says.

Hidden motives?

Some consultants and managers also cite frustration with in-house IS managers as a motive for departmental managers or senior executives to take control of systems integration projects, but others disagree.

"A lot of these general managers have been burned by systems in the past or read about [other people being burned]. They want to have some control over what happens," Heschel says.

"Operating managers are more educated about technology," Connell notes. Furthermore, he says, "nothing seems to be happening, or at least it's not happening on time or at reasonable cost, while they're reading about the great things being done by the Federal Expresses."

This situation can make managers receptive to sales pitches from systems integrators, he says.

It might not take a bad experience for top executives to pass up the in-house IS group for a systems integrator, according to Barnum. "Some outside people will tend to look at broader business issues and are better at communicating with management about issues that management is concerned with," he says. Top managers are likely to consider customer service and efficiency while "in-house systems people tend to have a much more functional focus," Barnum says.

Hixon calls *IS crucial to strategy changes*

Criticism of IS managers might be misplaced, according to Catherine Martino, a principal at the Cresap division of consulting firm Towers, Perrin in New York.

Not so simple

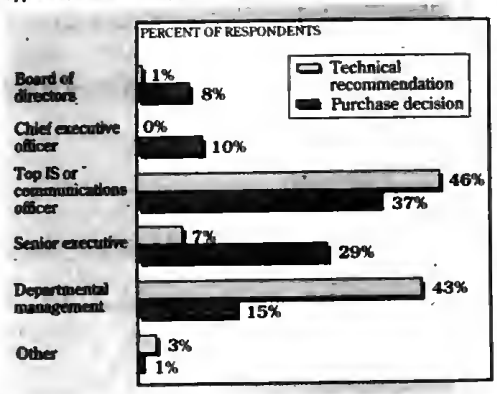
"There are a lot of reasons why MIS loses their credibility, and it's not always their fault. Sometimes, management and the users are not involved in setting priorities, defining requirements or testing," Martino says.

Sometimes, IS people tell top managers the same things consultants tell them, but the managers will not listen to the IS people, Martino adds. Uncommunicative executives and users who turn to a systems integrator out of frustration may confront the same problems they faced with the in-house IS organization, Martino says.

Eric Clemons, associate professor of Decision Sciences at the University of Pennsylvania's Wharton School, emphasizes that turning to a systems integrator can be the wrong solution to a lack of confidence in the in-house IS staff. "Dissatisfaction with the systems staff should be dealt with separately. It'll come back to bite you at some point," he says.

Who approves the hiring of systems integrators?

Levels at which hiring of systems integrators is recommended and approved, based on survey responses from 125 Fortune 1,000 firms



SOURCE: THE LEDGEWAY GROUP INC. CW CHART: DOREEN DARLE

CALENDAR

Integrated Services Digital Network (ISDN) is emerging as an international standard for worldwide communications. "Understanding ISDN," will be the topic of an upcoming CAP International seminar to be held in Cambridge, Mass.

The three-day conference, set for July 19-21, will focus on ISDN applications, capabilities and opportunities for using ISDN in the corporate setting. Executives using ISDN in their companies will share their experiences and offer advice on building ISDN applications.

For more information, contact CAP International at 1 Longwater Circle, Norwell, Mass. 02061.

JUNE 18-24

International Conference on Design for Manufacturability. San Francisco, June 19-20 — Contact: CAD/CIM Alert, 824 Boylston Street, Chestnut Hill, Mass. 02167.

Corporate Venturing Conference. Boston, June 19-20 — Contact: Venture Economics, P.O. Box 81248, 16 Laurel Ave., Wellesley Hills, Mass. 02181.

Cost Containment and Enhanced Performance. New York, June 19-20 — Contact: Conference Administrator, Institute for International Research, 331 Madison Avenue, 6th Floor, New York, N.Y. 10017.

Software Maintenance. Boston, June 19-21 — Contact: Technology Transfer Institute, 741 Tenth St., Santa Monica, Calif. 90402.

TCP/IP and OSI/ISO Networking Protocols Tutorials. Dallas, June 19-22 — Contact: Advanced Computing Environments, Suite 100, 480 San Antonio Rd., Mountain View, Calif. 94040.

Telecommunications Deregulation: Update '89. Bethesda, Md. June 19-20 — Contact: Conference Administrator, Institute for International Research, 6th Floor, 331 Madison Ave., New York, N.Y. 10017.

ATE & Instrumentation Conference East. Boston, June 20-22 — Contact: MG Expositions, 1050 Commonwealth Avenue, Boston, Mass. 02215.

Compcon '89 Conference. Gaithersburg, Md., June 20-22 — Contact: Nettie Quartaro, 2100 Washington Blvd., Arlington, Va. 22204-5704.

Computerworld Perspectives 1989, the annual executive conference for strategic information management. New York, June 20-21 — Contact: Leslie Price, 5 Speen St., Framingham, Mass. 01701.

National Educational Computing Conference. Boston, June 20-22 — Contact: NECC '89 Connections, Lesley College, 29 Everett Street, Cambridge, Mass. 02138-2790.

PC Expo. New York, June 20-22 — Contact: PC Expo, 333 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Second Annual National CASEcon, the computer-aided software engineering conference. New York, June 20-22 — Contact: National CASEcon, P.O. Box 1807, 333 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Interconnections '89, The Independent Computer Consultants Association's 12th Annual National Conference. San Diego, June 21-24 — Contact: ICCA, P.O. Box 27412, St. Louis, Mo. 63141.

Interglantic User Group Conference. New York, June 24 — Contact: Joe Rigo, 1385 York Ave., New York, N.Y. 10021-3904.

JUNE 25-30

Government Management Information Sciences Annual Conference. Virginia Beach, Va., June 25-29 — Contact: C. William Smith Jr., CDP, P.O. Box 8191, City of Virginia Beach, Virginia Beach, Va. 23456.

Marketing Problems and their Solutions. Chicago, June 25-28 — Contact: AMA Conference Dept., 250 S. Wacker Drive, Chicago, Ill 60606.

Symposium Conference. Orlando, Fla., June 25-29 — Contact: AISP Symposium XVII, Suite 201, 104 Wilmot Road, Deerfield, Ill. 60015.

Intelligent Network Conferom. Chicago, June 26-27 — Contact: Professional Educational International, Suite 740, 303 East Wacker Drive, Chicago, Ill. 60601.

Object-Oriented Systems Symposium. Boston, June 26-29 — Contact: Digital Consulting, Inc., 8 Windsor Street, Andover, Mass. 01810.

Summer Workshops for the Information Processing Professional. Nashua, N.H., June 26-29 — Contact: Ouellette & Associates, Inc., No.96, 40 South River Road, Bedford, N.H. 03105.

Multimedia & Hypermedia Exposition/Conference. San Francisco, June 27-29. Contact: CSRI, Suite 100, 2900 Gordon Ave., Santa Clara, CA 95051.

National Forum on Computer Systems Security in the Information Age. San Mateo, Calif., June 27 — Contact: Kristen Horgan, Addamax Corp., Suite 300, 1355 Piccard Drive, Rockville, Md. 20850.

North American MAP/TOP Technical Forum. Ann Arbor, Mich., June 27-30 — Contact: Mark Lively, P.O. Box 1157, 2901 Hubbard, Ann Arbor, Mich. 48106.

Object-Oriented Data/Process Modeling for CASE. Los Angeles, June 27-29 — Contact: Rapid Systems Development Inc., 211 W. 56th Street, New York, N.Y. 10019.

Total Recovery Planning System seminar. Cincinnati, June 27 — Contact: CHI/COR Information Management, Inc., Suite 1560, 10 South Riverside Plaza, Chicago, Ill. 60606.

Upcoming Telecommunications Opportunities in Europe. Washington, D.C., June 27-28 — Contact: BCR Enterprises, Inc., 950 York Road, Hinsdale, Ill. 60521.

Super-Intelligent Network Seminar. New York, June 28-29 — Contact: The Yankee Group, 200 Portland Street, Boston, Mass. 02114.

World Tech '89. New York, June 28-30 — Contact: Aetec, Suite 906, 225 West 34th St., New York, N.Y. 10122.

Strategic Resource Management Conference. Augusta, Maine, June 29-30 — Contact: Gigi Hathaway, State House Station 145, Augusta, Maine 04333.

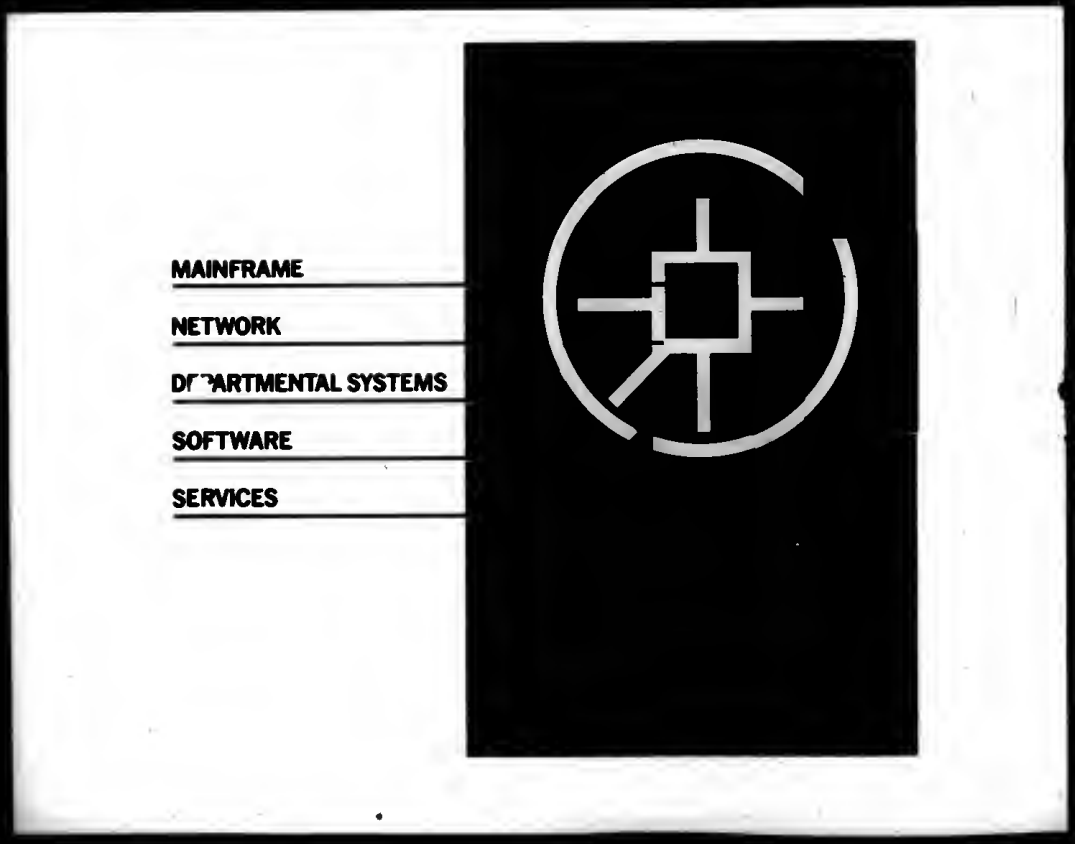
With all the computers
throughout our organization,
do we really need a mainframe anymore?

Can we tie all our
different computers together
without blowing our existing investment?

What about software?
We have a development
bottleneck that's choking our growth.

If you've been asking
questions like these,
you need to turn to a higher power...

The power


MAINFRAME
NETWORK
DEPARTMENTAL SYSTEMS
SOFTWARE
SERVICES

COMMON SENSE

The spread of computers throughout organizations has greatly improved the way many parts of the operation work. But the speed of that proliferation over the past several years has a downside, too.

Many computers from many different computer companies, each performing relatively isolated tasks. Or maybe computers all from the same manufacturer, but limitations on the ways you can change or improve your total information system.

Computing benefits. Computing barriers.

If only the valuable information in all your organization's computers was as available as the computers themselves.

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Today, there's a powerful customer movement toward the practical aspects of computing instead of the pie-in-the-sky add-ons. A movement to common sense.

It's a movement at Unisys, too. Providing powerful, practical and flexible information solutions to any or all parts of a customer's organization.

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UNISYS

MAINFRAMES

Are mainframes dead? Hardly. They're more important than ever. Charged with doing more, not less.

Besides holding and processing vast amounts of data, today's mainframes also distribute information.

At Unisys, we see mainframes as the hub of your information wheel, with smaller computers as the spokes serving departments and individuals.

WE BEAT IBM HEAD TO HEAD

We'll put our mainframes up against anybody's for reliability, productivity and overall customer satisfaction—measures customers tell us are most important to them.

In fact, Unisys mainframes beat comparable IBM systems in a head-to-head productivity study. Overall, IBM systems required 50% more full-time staff than ours. Within five years, the savings can virtually pay for the computer. And common sense tells you it's the cost of computing that matters, not just the cost of the computer.

IBM SYSTEMS REQUIRED 50% MORE FULL-TIME STAFF THAN UNISYS SYSTEMS.*

In a recent DATAPRO study, our high-end A Series mainframes also beat IBM in customer satisfaction and reliability. One reason? Our A Series offers the widest performance range in the industry without requiring changes in operating software. Another practical solution that saves time as well as money.

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For sheer power, our 2200 line—capable of processing up to an amazing 6500 transactions per second—is a real workhorse.

Large organizations are counting on this massive capacity for critical jobs like high-volume reservation systems, online banking and payment processing. And the entire 2200 family was built to run all the same software as its predecessors. Common sense!

DATAPRO USER SURVEY

A12/A15/A17 Took Top Honors Over IBM† in:

Overall satisfaction	**8.8**	**vs. 8.3**
Performance as expected	**100%**	**vs. 96%**
Recommendation to others	**100%**	**vs. 96%**
Ease of operation	**9.5**	**vs. 7.5**
Reliability	**9.6**	**vs. 9.3**
Operating system	**9.6**	**vs. 8.8**

COMMON INDUSTRY STANDARDS

If the mainframe is the hub, common sense says it better link with the other computers in the system, no matter who made them. Unfortunately, that's not the case with most mainframe vendors.

Except Unisys. We've bet our future on open computing and interoperability. As a result, we were the first major company to incorporate common industry computing standards into mainframes. And we'll continue that leadership. It means you can be more flexible. And more connected.

Common standards. Common sense.

UNISYS

*For systems and sites surveyed. 1988 independent survey of over 600 user sites

†Four IBM 3090 performance ranges surveyed. Results reported represent best IBM score for each category

DEPARTMENTAL

Small systems let departments and individuals use computer power for themselves.

Some call this freedom. Others, loss of control. Common sense tells us that freedom and control aren't necessarily contradictory, so our systems give you the best of both. At Unisys, we distribute computing power throughout companies—all the way to the desk. For jobs you do independently, as well as jobs requiring working with others. We give you flexible, "networked" computing systems. And we give you choices.

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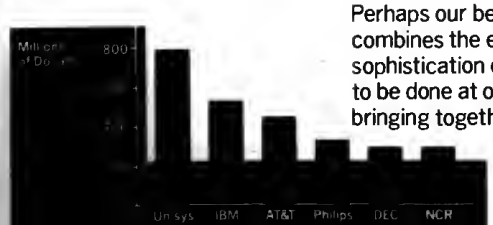


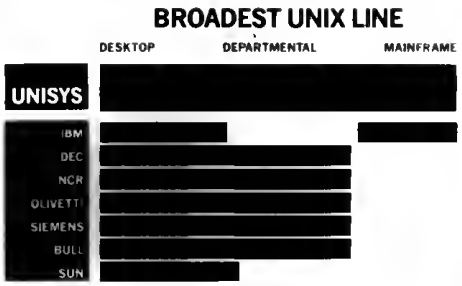
COMMERCIAL UNIX REVENUES
6 Leading Suppliers–1988

SYSTEMS

NUMBER ONE IN COMMERCIAL UNIX SYSTEMS

As an open computing platform, the UNIX operating system gives you the freedom to access the best solutions and technology available, no matter who makes them. That's why Unisys committed early on to providing the best UNIX solutions on the market.

Today we are the top seller of commercial UNIX systems. We offer the most comprehensive line of UNIX systems in the industry: from PC to mainframe, serving from one to hundreds of users. With unmatched software support. No other company can rival our UNIX product breadth and software depth.



NETWORKING EXPERIENCE

Our track record in departmental and open computing also drives our leadership in networking. High-speed switching, integrated voice and data. Local area and wide area networks. Whether or not the computers at each end were made by us, our networks let you communicate.

Practicality like this has been well received by customers. And helped Unisys grow a $2 billion open computing business in just two years.

Uncommon flexibility. Common sense.

UNISYS

SOFTWARE

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COMMONSENSE SOFTWARE

At Unisys we believe that the best software solutions are those matched to your line of business. That's why we provide industry-specific applications like branch and retail banking systems, library management, healthcare and manufacturing production control systems, to name a few.

In addition, we've established relationships with OEMs and third-party application developers who offer even more software choices for your industry. And our UNIX leadership is resulting in alliances with leading software suppliers to bring their solutions to the UNIX market on Unisys products.

EXPLODE THE DEVELOPMENT BOTTLENECK

We've also addressed the problem of creating and maintaining your own software.

We know that computing in large organizations has resulted in massive commitments of people and money to application development and maintenance. And the backlog still grows.

With our LINC, MAPPER, and ALLY software productivity tools, what's always been a slow and expensive procedure is now faster, can cut resources by a factor of up to 45, and is dramatically less expensive.

Programmers can update and maintain their software without starting over—the Unisys tools automatically handle the details. Flexible new applications can be created easily and much faster. And users can get information in the format they want, so it's easier to analyze.

In other words, we've applied common sense to software.

Over 60% of our mainframe customers use these fourth-generation language-based productivity tools.

Apply a little commonsense computing. And productivity becomes commonplace.

UNISYS

PUTTING IT

It's one thing to know what the parts are. But the key ingredient of commonsense computing is making all the parts work together in a way that makes the most sense for you, rather than for your computer vendor.

TOP SYSTEMS INTEGRATOR

Commonsense service like ours is more than just the hardware maintenance we provide. It means focusing our skill and experience on your information system in the context of your strategic business goals, recommending the best answers to your immediate and long-term needs, and then working to put it together with what you already have.

We know how to do it. In fact, we are one of the top five providers of professional services and one of the top five systems integrators in

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of

TOGETHER

the world. And we make it our business to know your business.
In fact, we're organized to serve specific industries.

We can give you the whole package.
Or any part you're not getting from
your current vendor.

We're broad in scope. Reliable. And flexible enough to accommodate all the varied computer choices you've made to date and want to make tomorrow.

The point is you can have a lasting partnership with Unisys that builds a lasting partnership between you and your information system.

PROFESSIONAL SERVICES

1 TRW
2 ADP
3 ELECTRONIC DATA SYSTEMS
4 COMPUTER SCIENCES CORP.
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*Source Datamation

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rated most reliable. Proven mainframes–
cutting the cost of computing, not just computers.

UNISYS.
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departmental systems
and UNIX. The broadest choice of systems.

UNISYS.
Specific industry
applications, and the best
development tools to explode your software bottleneck.

A $10 billion international company.
Leading in systems integration and professional services.
Organized around your line of business.
Try the power of Common Sense. Call 1-800-547-8362.

UNISYS AND YOU
The power of ²

Size is beside the point — all that really matters is fit

BY ALAN RADDING

When Steven Gold proposed scrapping the mainframe at Echlin, Inc.'s Branford, Conn., headquarters and running all applications on personal computers hooked together on a local-area network, the users were immediately suspicious. It was late 1985, the term "downsizing" was virtually unknown, and it did not seem at all likely that an information systems person would really think that smaller was better.

Gold, manager of systems and programming for the $1.3 billion automotive parts manufacturer, gave his proposal to top management on the basis of cost savings. He recalls, "The users were afraid that meant we were going to give them inferior systems."

Before the plan was approved, Gold's team had to promise to deliver exactly the same functionality that was provided by the mainframe. The users would not be asked to change the way they used the systems.

Satisfying those conditions required some extra development work, Gold says, but they were met and the company sold its IBM 4341 as spare parts.

Today, system downsizing is a much more familiar concept and much less apt to be viewed with suspicion by users, although it can take many forms, and not all of them are as extreme as Echlin's action.

In its simplest form, downsizing is the process of moving applications from large computers to smaller ones. It may entail wholesale migration to a smaller host or the sharing out of some tasks through cooperative processing. It can mean moving from a mainframe host to a minicomputer, although these days it is more likely to involve shifting applications from a mainframe or minicomputer to a platform of networked microcomputers.

The client-server architecture is the most commonly accepted model for downsizing.

Radding is a Boston-based free-lancer specializing in business and technology.

STELLA JOHNSON

Echlin's Gold *turned his mainframe into spare parts*

The client-server model calls for PCs and file servers to be linked on a LAN. The applications and data that previously resided on the central computer are spread among the PC workstations and servers. All front-end and back-end processing, along with the data, resides within the downsized system.

By extension, the term is also frequently used to describe development of applications on and for PC LANs. In many instances, these are projects that would not have been feasible for a mainframe environment.

Time is often the issue. "An application that takes two years to develop on the micro takes four years on the mainframe," says Daya Pillay, a consultant at NPM Development Ltd., which managed a recent downsizing project for Maritime Life Assurance Co. in Halifax, Nova Scotia. Other users say the gap is even wider and talk of developing downsized applications in terms of weeks or months.

In other instances, applications, while important and useful, just would not have been big enough to command development attention. At Gillette Co. in Boston; for example, a LAN-based system featuring a database of credit history information was created for shared access by a 15-person work group that handles credit issues.

"This is a small application that isn't practical on the mainframe," says Greg Chetel, director of systems planning and research at Gillette's MIS division.

Clearly, downsizing is no longer as heretical an idea as it once seemed. Hardware and software advances have made the idea legitimate. Breakthroughs in chip speed, reduced instruction set computing technology, powerful dedicated LAN servers and expanded desktop and server storage are making downsizing feasible from a hardware standpoint.

Today's microcomputer disk drives already rival or even beat the access time of large mainframe drives, although the top PC transfer rate of 1.2M byte/sec. still trails a mainframe's 4.5M byte/sec. rate.

Along with more powerful processors, network speed is steadily increasing. Although the standard Ethernet speed of 1.2M bit/sec. lags behind the approximately 6M bit/sec. channel speed of an IBM 3090, commercially available networks reportedly run as fast as 12M bit/sec., and fiber optics could significantly extend the concept of local-area networking from within the same office space to within a radius of dozens of miles.

On the software side, the following issues are getting attention: the spread of Unix into the corporate world, OS/2, Windows, Presentation Manager, C language, Cobol for PCs, enhanced relational databases, acceptance of SQL, fourth-generation language application development tools, remote procedure calls (RPC), the development and wide acceptance of connectivity standards and the accumulation of years of experience in getting around the inherent limitations of PC-/MS-DOS.

The sum of these parts, if designed properly, can add up to greater processing power at tremendously lower cost than a mainframe — the basic premise and promise of downsizing.

The question is, however, just how far should that premise be pursued and how fast?

Echlin's Gold argues that there is no commercial application that cannot be effectively downsized. He is convinced that

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currently available technology can amass and harness enough gigabytes of storage at fast enough processing speeds and with enough control to handle any operation, even mission-critical, on-line transaction processing, at a substantial cost savings.

Using 65 IBM and compatible 386 machines, two Intel Corp. 80386-based file servers and two Motorola Corp. 68000 S-Net file servers on a Novell, Inc. LAN, Gold downsized all headquarters applications, saving the company, he estimates, about $800,000 per year. The corporate IS budget now stands at $300,000 per year, he says, although the work load has doubled since downsizing began.

Gold would like to see Echlin's 50 manufacturing divisions follow this example, but so far, they are not. "I'm pushing it," he says, "but they're hesitant. Change is difficult — often frightening."

A little hesitation may not be a bad thing, according to Bob Danowitz, a principal at Index Group, Inc., a consulting firm in Cambridge, Mass. Danowitz is concerned that top management, looking for cost-efficiencies and improved paybacks from information systems, may see downsizing as a quick fix.

"Corporations have a lot to complain about [concerning large information systems], but they are often complaining about the wrong thing," he says. Downsizing is an important and valuable strategy, Danowitz adds, but it is not necessarily the solution to the systems problems that have corporate managers fuming.

Besides, other consultants and market researchers say, not all the pieces for true, widespread downsizing have fallen into place. Some are well along in the development pipeline; others are not yet off the drawing board. Communications, connectivity, robustness and the operating system are problem areas that need to be addressed before minicomputer functionality is fully achievable on a PC-based network.

There is a pressing need for robust products that offer a more refined database structure, better tailored for the client-server environment, says Marty Gruhn, vice-president of The Sierra Group, Inc. in Tempe, Ariz. "SQL is a foundation product in the client-server architecture," she adds. A number of organizations, particularly those pursuing serious downsizing strategies, are pushing the present limits.

New SQL products, such as Ashton-Tate Corp./Microsoft's SQL Server, which provides the back-end functionality of the SQL operation, are expected to expand those limits, providing better relational database capabilities in a PC-based network environment.

It is also hoped that network software products, like Novell's Netware 386, will increase the number of users on a LAN and allow for better network management in the downsizing environment, particularly in such areas of major concern as security, backup and recovery.

Gold says the Novell LAN operating system he has been using, Netware 2.1, handles security and management issues well; in fact, he maintains, "The security is better than it was with the mainframe." Others still have qualms about the current state of the art, however.

"My only real concern, after I was satisfied that the capacity was there, was not being in control of the total computing environment," says James Miller, vice-president of MIS at James River Corp. of Virginia, a manufacturer of consumer and specialty papers based in Richmond, Va.

Miller is running two pilot downsizing applications — financial consolidation and logistics scheduling — on PC LANs, and he was nervous about the ability of the micro-based system to ensure backup, recovery and data integrity.

"With the mainframe, you know you have backup and restore functions, and with data coming and going from so many locations, you have ways to ensure data integrity," he says. In the downsized environment, Miller adds, those capabilities are not as well-developed, even though vendors are building them quickly.

There is also work to be done at the PC operating system level. The DOS 640K-byte memory constraint is the major underlying problem. The memory limitation handicaps all efforts to correct the communications and management problems. It also preventa developers from taking full advantage of PC graphics and easier PC user interfaces such as windows, which are among the best features of working in the PC environment.

Serious downsizing requires ease of connectivity and full multitasking/multiuser functionality, which is available with Unix or OS/2.

While IBM's introduction of Systems Application Architecture (SAA) with application set for office automation gave OS/2 a big boost, some analysts doubt that even SAA gives OS/2 enough of what is needed for effective downsizing.

"The problem with any PC operating system [for major downsizing] is that it isn't as robust as the mainframe operating systems," says Brad Friedlander, senior consultant in the Information and Telecommunications Systems section at Arthur D. Little, Inc. in Cambridge, Mass. What is needed is a PC operating system with the functionality of MVS or VMS.

Software tricks

In the meantime, some users at the limits of DOS are using extenders and other tricks to avoid the memory limitation, rather than moving to new technologies.

"We hit 512K and now we're at 640K. The next version of our network software is going to need 180K more," says Stephen Wright, senior advisory analyst and division chief of consumer prices and consumption studies at the U.S. Bureau of Labor Statistics in Washington, D.C.

Wright's group uses PCs and a dedicated Sharebase Corp. server on a LAN to do data gathering and analysis for the government's consumer price index. The job had been done in a classic mainframe/dumb terminal environment.

Unix as a solution to Wright's problem is out. "We're not in the Unix world and we won't retool at this point," he explains. He is also is reluctant to make the move to OS/2: "We have so many utilities and third-party tools in DOS, it will be a long time until we can get them in OS/2." Meanwhile, his downsized system will have to work around DOS's limitations.

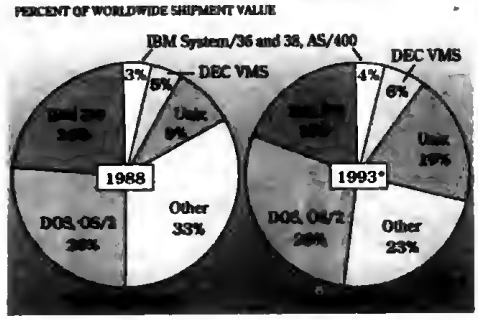
"Communications is the weakest point," says Robert D. Walsh, vice-president and a downsizing specialist at Boston Systems Group in Boston. Downsizing almost always involves several vendors, Walsh notes; although advances in servers and gateways and the growth of open standards helps, he says, "it is still tough getting machines to talk to each other."

Gary Savarese, project manager at Rochester, N.Y.-based Kodak Information Systems, a division of Eastman Kodak Co., knows that problem firsthand. Savarese is overseeing a pilot project that

Continued on next page

Architectural outlook

Shipments of DOS- and OS/2-based systems are expected to increase slightly during the next four years, but the biggest winner will be Unix



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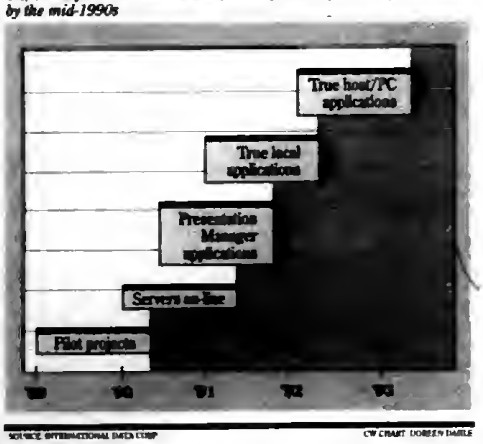
OS/2 maturation

OS/2 is expected to blossom into full cooperative processing by the mid-1990s



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Ease on down

BY ROBERT D. WALSH

The introduction of any new technology into an organization is commonly accomplished by using an evolutionary approach. A period of experimentation is followed by the development of operational prototypes employing the new technology. Full-scale deployment does not occur until an adequate level of understanding has been reached.

Because system downsizing can incorporate such a wide variety of new software and hardware products, the complexity of the integration task is multiplied. What follows are a few informal prescriptions for managing the assimilation of downsizing technologies within an information systems organization.

- Leave just enough room for discovery. Assume that learning about downsizing technologies will be a continuous process and create a permanent yet flexible downsizing development environment, which will allow programmers to experiment. Do not worry too much about picking the ideal tools. It is perfectly appropriate to work with two or three products in each category until you feel you have gained enough experience to make strategic choices for your business needs.

Some limits do have to be imposed. Dealing with more than two or three proven products will impede learning and foster endless experimentation without result.

- Target your educational efforts. Focus your initial training efforts on a select group of your highest caliber people, leveraging any existing knowledge base by making leaders out of those with past experience in the technologies. If no one on staff has usable prior experience, hire some, if only for a limited time. Also, make sure that training is shared with users, to gain their informed participation and assistance.
- Place your downsizing developers with the client/user organization. Show them firsthand why downsizing is an issue and what is relevant from the user's perspective.
- Develop a careful strategy for selecting downsizing projects. Start with a manageable project that will be recognized and valued. Focus on the desired business results, rather than the technology used. Avoid projects that are likely to become the battleground for alternative technologies. Concentrate on projects that involve deeply committed users, because the results of downsizing can place significantly increased responsibility on the shoulders of system users.

Walsh is vice-president at Boston Systems Group in Boston.

Size and fit

CONTINUED FROM PAGE 70

will determine the feasibility of widespread downsizing. The project involves putting the division's payroll system, previously handled on a mainframe, onto a PC-based LAN using off-the-shelf human resources applications software. The system includes 25-MHz, 386-based servers and 386-based workstations. "It is hard hooking up multiple LANs or providing remote access," he complains. Savarese expects improved technology, mainly OS/2, to overcome that problem within the next year.

Because of the current technical limitations of both the hardware and software, particularly the I/O bandwidth problem, downsizing is not yet appropriate for all applications.

"You have to look at the difference between mainframes and PCs. While it's true the difference in MIPS is decreasing, there are others," Danowitz says. Those differences determine which applications can go onto the downsized system.

For instance, secondary storage is a key issue. "When you buy a mainframe, you automatically buy the capacity to handle gigabytes and gigabytes of storage," Danowitz explains. In addition to capacity, throughput is also important, he continues. "You have to consider the sheer volume of information you are moving through the processor. Today's channel or bus capacity is like comparing a major water main — the mainframe — to a tiny capillary — the PC."

Choosing applications to downsize becomes a question of degree. "How many people are going to need to access the application?" Danowitz asks. If 1,000 people need access, the PC LAN system will not be sufficient regardless of how many millions of instructions per second (MIPS) there are. If only 100 people are accessing the application, the downsized environment may be more appropriate, "although you'll be stretching the limits of technology," he notes. Danowitz suggests, as a general rule of thumb, that the greater the amount of data to be moved and the higher the rate and the larger the number of users, the more likely the application should be remain on the mainframe. On the other hand, if you are talking about a relatively small application, the downsized environment is ideal.

Early users are following that strategy. "It's a question of functions," James River's Miller says. For low-complexity applications that require flexibility, particularly for analysis and reporting, Miller says he believes that the downsized strategy is best. For data-intensive, mission-critical applications where control is vital, he prefers the mainframe.

"We are not going to fall into the trap that everything should be on PCs. Our strategy is to make an assessment of where the computing for each application should reside," he says. IS' role is to look across a variety of platforms to determine the best location for each application.

For instance, James River keeps its general ledger on a mainframe, and in the past it handled all financial consolidation there as well. But the mainframe was unsuited for the financial consolidation effort, which involved a small team doing data collection, analysis and reporting. So, in 1988, Miller set up a LAN with 20 users to handle data collection from 40 data sources and financial consolidation.

"It was a self-contained application," he points out — a perfect candidate for downsizing.

Gillette is moving applications from the mainframe to PCs on a LAN, but very deliberately; not every application is a candidate for downsizing. "Applications that must be centrally managed and controlled, like order entry, will stay on the mainframe," Chetel says.

The following notion has taken root and flourished in the wake of well-publicized and successful downsizing efforts: Mainframes are lumbering dinosaurs staggering toward extinction as we enter the era of powerful, low-cost PC-based systems. That idea is both misguided and overstated, according to not only users and consultants, but even vendors that supply downsizing technologies.

"There are practical issues here. If you access large amounts of data fast, there is no real way to do that except on a mainframe," says Marc Sokol, executive vice-president at Realia, Inc., a Chicago-based manufacturer of PC-based Cobol compilers, a key tool for moving mainframe applications into the PC environment.

Sokol dismisses the idea that a massive mainframe database can be spread across a number of PC workstations on a LAN and rapidly accessed as a single transparent database anytime soon. "No one yet has a truly distributed database with distributed update," he says. The complexity of such a task is enormous and would quickly sap the speed and power of the current downsized systems.

The extinction theory is based almost entirely on MIPS as a measure of CPU performance, which is a skewed comparison that produces flawed logic, according to Arthur D. Little's Friedlander.

"In terms of raw horsepower, you can get the same CPU speed, but that doesn't make the system equivalent to a mainframe," he says. There is more to mainframe computing power than MIPS. Normal mainframe applications are data access-intensive, which requires great bandwidth to move data quickly.

In a downsized environment, "the I/O bandwidth is not nearly as great, even if the MIPS are equivalent," Friedlander maintains. Moving data becomes a bottleneck. You can not now move the data fast enough to take advantage of the processing power of the system, he says.

Maritime Life is currently grappling with that reality in terms of its downsized system for administration and accounting of pension plans. The company is using two Compaq Computer Corp. 386/25 servers with 300M-byte disk drives and 12 Compaq 286 workstations on a LAN to handle the application, which previously ran on its 3090. The power of the micro-based technology is impressive, says NPM's Pillay, the consultant who designed the systems for Maritime Life, but disk access bogs down the system.

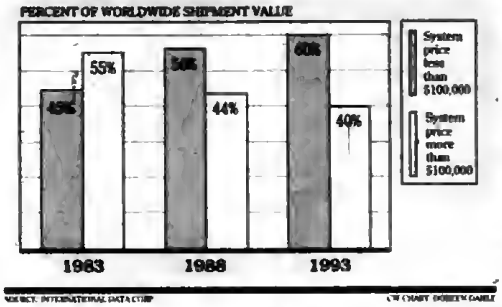
"We got the fastest CPU available for processing," he says. The problem, however, is not the size of the disk drive or the power of the CPU, but the access time. "We wish we had mainframe access speeds on the drive," he says. The system is slow when it has to access and share data across the network.

Maritime Life will not change back — the benefits of downsizing in terms of cost savings and ease of use are so great. But, Pillay says, "We're trying to look for some kind of hybrid. Maybe we'll keep the data on the mainframe and run the applications on the micros." The mainframe will be reduced to the role of a big, fast database server.

The trick, then, is to stop thinking in terms of labels like mainframe, mini or micro and instead think in terms of power, functionality and cost-efficiency. The real issue in downsizing is productivity — using systems to give the organization a competitive advantage. Technical advances have made downsizing a powerful new variable that IS must consider in its calculation of power, functionality and cost to arrive at the best solution to a problem. In the end, productivity is the deciding factor, not the size of the box. •

It's a small world

Computer purchasers are shifting their focus and moving to smaller, less expensive systems



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There is more to downsizing than bargain prices

The prospect of cost savings is fueling much of top management's interest in downsizing, but information systems professionals argue that cost alone should not be the determining factor.

The cost advantages of downsizing are laid out in a 1988 International Data Corp. report: A 32-bit complex instruction set MIPS costs about $120,000 on a mainframe, compared with $1,000 for a micro-based system. A megabyte of primary memory on a mainframe costs $3,000 to $5,000, 10 times the cost of an equivalent amount of microprocessor memory. Disk storage on a mainframe costs twice as much, according to the IDC report.

More savings come about through reduced personnel costs, says Steven Gold of Echlin, Inc. Low-cost MIPS can be used extravagantly to run advanced fourth-generation language software tools that make development and maintenance easier. "Consequently," he points out, "your software costs drop dramatically; because you need fewer people, your personnel costs drop also."

There can, however, be offsetting factors. "Users think that downsizing will reduce the costs charged against their budgets," says Greg Chetel, director of systems planning and research at Gillette Co.'s corporate MIS division. The truth is, however, that while downsizing does save money, end users may not see immediate savings because reduced hardware and software costs may be offset by initial increases in support.

With responsibility for applications and system management and control in the hands of the end users, the IS staff at Gillette has been forced to become more involved in supporting end users, Chetel says. "If anything, as we add end-user computing, it is increasing the demand for professional MIS services." So, end users will not see their overall charges from IS drop very much, at least not at first. Mainframe charges will drop but support charges will increase.

Furthermore, while promises of cost reduction can be a way of attracting the support of top management, some IS managers find it hard to pinpoint the specific savings. For instance, downsizing saved Stephen Wright's Consumer Price Index Group at the U.S. Bureau of Labor Statistics the monthly cost of the mainframe time-sharing service it was using. "But now," he says, "we have to do a lot of things for ourselves that they did for us." The group also changed the sample size and data collection methods, so direct cost comparisons are virtually impossible.

NPM Development's Daya Pillay projects a total payback in three to five years for Maritime Life Assurance. "We didn't look at the problem as a simple MIPS comparison," he says. Instead, he calculated the entire system cost including operation and essentials like backup and recovery. Still, the basic hardware and software savings are immediately appealing. "Adding one tape drive to the mainframe costs thousands of dollars vs. about $500 for the micros," he notes.

Downsizing's productivity component should be calculated into the cost equation. New applications that give the organization a strategic advantage can be developed and put into the hands of users much faster. "Even if the cost comes out the same, we're doing more, doing it faster and getting more reliable results," Wright says.

ALAN RADDING

Business goals determine downsizing success

BY WILLIAM N. HARRIS and SUSAN K. BEHNKE

Decisions about whether and what to downsize should not be made on the basis of architectural appeal alone. Judgments in this area, like other kinds of business decisions, should be governed by considerations such as management philosophy, corporate strategy and direction, organizational structures and user requirements.

To begin with, informed decisions about downsizing require a clear understanding of where the business is headed.

Acquisitions and divestitures can significantly change the corporate structure, user requirements and economic considerations. Undertaking a leveraged buyout may, for example, require stringent cost-cutting measures to service the debt burden, which could make the economies of scale involved in downsizing more attractive.

Further, a move to smaller platforms is often a natural when a company is planning to decentralize its business functions.

THE CHALLENGE is to decide which functional logic and which data to move to the smaller systems and then how to link these diverse systems together again.

A company going through such a change would obviously have a built-in incentive for reexamining its whole portfolio of applications to determine which ones might be more effectively processed in a decentralized — and perhaps downsized — environment.

Even when the organization's philosophy and direction leans toward centralization, there may be occasions when downsizing makes good business sense. Users in some departments may, for example, have a demonstrable need for more computing capability than a completely mainframe-based system can provide, and that situation may prompt some measure of downsizing.

The move to 'how'

It is when the decision-making process has progressed from the "whether" to the "which" and "how" stages that things get tricky. There are many factors that must be weighed and balanced to select the proper application candidates.

For example, the criticality of information can, depending on the specifics of a situation, weigh heavily either in favor of or against downsizing.

Generally speaking, one would not choose a complicated application involving significant amounts of data manipulation as a candidate for downsizing. The same would be true for an application that requires the creation and maintenance of large-scale databases, both because of the volume of data involved and the possibility that several units may need access to the databases.

There are, however, instances in which complexity and span of use may actually be a reason for moving applications off a mainframe and onto a minicomputer or personal computer local-area network.

Mainframe-based applications are often old and have been patched and added on to over the years. This makes them large and unwieldy and, more importantly, renders them exceedingly difficult to maintain.

If a mainframe-resident system is critical to the welfare of the enterprise — in the way that funds-transfer applications are in banking, policyholder and agency applications are in insurance and scheduling applications are for airlines — extreme size and complexity can represent such a vulnerability that downsizing becomes an option that should be seriously considered.

In such circumstances, downsizing is not easy. In fact, it can be a very complex technical challenge. Applications and databases will have to be split, most likely along functional and platform lines.

The challenge is to decide which functional logic and which data to move to the smaller systems and then how to link these diverse systems together again. What will make this possible in the future is the growing capabilities found on the workstation and micro levels.

So far away

Distance can also occasionally argue for downsizing even large and complex applications. If most of the users of an application are located far from the data center, the possibility of reducing network costs may offer a significant incentive for downsizing.

Additionally, if users bridge multiple time zones, downsizing can provide scheduling flexibility and reduce dependence on mainframe-level technical expertise, which is a scarce commodity

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Of course, downsizing is not an absolute term. Some organizations may leave corporate databases on the mainframe host, deciding to migrate only the performance of analytical functions to minicomputers or microcomputers in some form of cooperative processing.

In applications that must accommodate a number of different user groups that need to access the same data, it makes sense to downsize query and analysis while maintaining the databases on mainframes.

Let the mover beware

There is one caveat connected with approaching downsizing in this fashion: When databases are centralized and analytical processing is localized, continuous upward and downward transmissions can make the cost of data communications onerous.

ARE THERE COMPLAINTS that an application running on the mainframe is too slow? Everything else being equal, downsizing to a mini or micro could result in better response time for the user.

For that reason, cost should play a vital role in determining what data and/or processing should reside on the mainframe.

Some general criteria can be applied in making judgments about whether an application is a good, fair or poor candidate for downsizing. As mentioned previously, extreme size, complexity and data manipulation requirements usually suggest an application better left on the mainframe, although other considerations may override this rule.

Other characteristics to evaluate include the following:

- **The need for corporatewide access to and consolidation of data.** If this is not needed, an application may very well be a good candidate for downsizing.

Even in a manufacturing environment in which several plants are operating the same manufacturing resource planning application, for instance, there is no reason that that application cannot be downsized onto minis or microcomputers at each plant, as long as the organization is not trying to schedule production across multiple plants or move products from one plant to another for different stages of fabrication.

- **The extent of need for communication with mainframe-resident databases.** Applications that do not require constant exchange are good candidates because both complexity and communication costs are manageable.
- **The degree of security required.** Some applications require more protection than others, and it is important to consider whether the appropriate data safeguards can be supplied at the PC or mini level.
- **Response-time requirements.** Are there complaints that an application running on the mainframe is too slow? Everything else being equal, downsizing to a mini or micro could result in better response time for the user.
- **Number of ties.** The fewer application-to-application linkages there are, the easier downsizing an application will be. The same holds true for user-to-user linkages within the application.
- **Importance of failure avoidance.** Downsizing can be advantageous or disadvantageous in this regard, depending on the case. A LAN environment might represent an improvement in some instances, because there would be no single point of failure.
- **Prior acquaintance with workstation logic.** Applications that currently use PCs either as terminals or as part of the logic are candidates for downsizing because there already is a workstation orientation.
- **Degree of hands-on contact.** Is data extrapolation and massaging by users a critical capability? If so, the application is a downsizing candidate. Examples of this type are decision support systems such as financial and marketing analysis programs.
- **Replacement potential.** Is it possible to completely get rid of a mainframe by downsizing? Savings are maximized when the company can get rid of the costs of mainframe rental and maintenance, systems software and personnel that go along with operating a mainframe.
- **Freshness quotient.** Applications in which last night's data is either good enough or all there is are better prospects for downsizing than applications in which data is critical to operations or decision making and must be continuously available and updated.
- **Commercial alternatives.** These include applications that are candidates for the use of packaged solutions on the mini or PC.

This list of characteristics is not meant to be comprehensive, but it is a reasonable starting point for the kind of intensive examination that should preface any downsizing effort. •

Harris and Behnke are chairman and president of Behnke Harris & Associates, Inc., a New York/Atlanta consulting firm that specializes in the integration of information technology with business strategic and operational requirements.

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Composing on a small scale

BY ANDREW TOPPER

Many companies are finding that using personal computers and local-area networks to support application development can help reduce the resource requirements on the corporate mainframe. This, in turn, can significantly reduce the overall costs of developing, maintaining and supporting applications.

There are a number of ways in which PCs and LANs can be used in the application development and support processes. PCs can serve as both the development and production engine for the application. They can be used to develop and test applications prior to implementing them on a mainframe, helping to reduce the costs associated with development on the resource-hungry host.

They can also be used to test and debug existing mainframe applications. The advantage is that PC-based Cobol products usually offer a more interactive testing environment than their mainframe counterparts.

The Personal, Financial and Security (PF&S) division at Aetna Life & Casualty in Hartford, Conn., is using Micro Focus Cobol from Micro Focus, Inc. to bring both the development and maintenance of existing mainframe insurance applications down to the PCs.

Conversion diversion

According to Richard H. Lee, productivity center consultant, most of the file-access routines at Aetna were written in assembler and could not be directly converted to work on a PC. Getting all the libraries of standard mainframe routines converted to the PC involves moving the assembler source code to the PC and then translating it to Cobol. This has added to the time required to migrate these routines down to the PC.

The applications ported are typically older and use sequential files, VSAM files or IBM's IMS/DL1 database management system. Lee says he has found that the Micro Focus Cobol IMS and CICS options work fairly well and are compatible, although he notes that restrictions with the PC-based versions can cause minor problems.

Lee found several technical issues to consider when downsizing applications from the mainframe to PCs or LANs. For example, moving data between a mainframe and a PC can be difficult and time-consuming, he says, because the conversion from EBCDIC to ASCII is not always transparent. Also, accessing the mainframe data when needed can be difficult, and checking sequences for their correct order can take time.

Aetna found that providing each programmer with a workstation can be expensive, and memory requirements can add to that cost. Lee's suggestion for a minimum configuration is an Intel Corp. 80386-based PC with 2M to 4M bytes of random-access memory and at least 60M bytes of hard disk space.

While Aetna PF&S has chosen to downsize mainframe applications development using Cobol, the Texas Department of Human Services (TDHS) in Austin has turned to a PC-based DBMS for its downsizing effort.

Terry Parmley, assistant commissioner of the office for systems development at TDHS, says that the agency's choice of a combination DBMS/fourth-generation language — in this case, Revelation Technologies, Inc.'s Advanced Revelation — to downsize its mainframe-based client work-in-process tracking system to a LAN-based application was "a matter of selecting the right tool for the right job." The overall goal is to bring to the desktop a system that will support human services in a cooperative, transparent environment.

History review

TDHS currently maintains a central database of historical data on clients on a mainframe in its Austin office. With the desktop systems, located in local TDHS offices statewide, information can be uploaded to the mainframe once the services have been completed.

TDHS found that migrating from a mainframe to a PC LAN environment pays off. The homegrown mainframe-based system was initially developed to track old and new clients.

With the downsized system, the new client data is kept on the desktop, easily accessible to service support staff; the inactive client information resides on the mainframe. By doing this, the time spent processing new and continuing clients has been cut in half, from one hour to 30 minutes, thus saving the agency money.

In dealing with a widely dispersed group of users, Parmley and TDHS realized that in a downsizing project, personnel need to be reoriented to the new systems and made aware of the different perspective provided by using a smaller system.

Parmley recommends approaching automation on a PC or LAN as if it were a new environment or tool being developed. Users need to be trained — they should not be expected to be automatically productive.

Parmley suggests performing extensive pilot testing and training prior to committing to the desktop environment. He points out that by keeping expectations realistic in the pilot phase, TDHS was able to move forward with its downsizing effort without any major problems. He also recommends insulating the application from other PC-based applications until the system and its users have stabilized.

Both the Aetna project and the TDHS effort show that the benefits of downsizing applications development, support and maintenance can be realized if all issues — technical and procedural — are addressed and managed effectively. •

Topper is president of Foresite Systems, a Lansing, Mich., consulting firm.

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Portable LANs cushion the jump down

BY MICHAEL HURWICZ

Change, even for the better, is stressful. No one appreciates that more, perhaps, than the information systems manager who is considering downsizing his department by moving applications from host computers to networks of smaller computers.

There are myriad changes entailed in moving from one computing platform to another. Users have to learn new interfaces. All the maintenance and administration in place for the host has to be implemented for the local-area network including backup, physical security, environmental controls and plans for recovery from normal breakdowns and disasters.

This upheaval is not a pleasant prospect but, until recently, there was no real alternative if you wanted to gain the benefits of microcomputer applications and the client-server architecture. Now, instead of moving lock, stock and barrel off the host and onto the LAN, you can install a portable version of a LAN operating system on a host and use the host as a LAN server.

A portable LAN operating system is designed to be implemented on a variety of hardware platforms, such as microcomputers, minicomputers and mainframes. One example is Portable Netware, jointly developed by Novell, Inc., NCR Corp. and Prime Computer, Inc. Another is LAN Manager on Unix (LM/X), jointly developed by Microsoft Corp. and Hewlett-Packard Co.

Not really avoidance

At first glance, porting the LAN operating system to a host machine might look like a strategy for avoiding downsizing rather than accommodating it. However, that is not necessarily the case.

It is true that portable LAN operating systems can be a way to avoid using microcomputers as servers, but it is just as true that the alternate choice could be smaller than a mini or a mainframe. Portable operating systems can run on supermicros. Besides, distributing processing to microcomputer workstations is a form of downsizing, even if the server is a mini.

Just installing a client-server LAN — whatever the server — means moving processing to smaller machines. In a terminal-to-host environment, the host does all the application processing. Intelligent workstations, if present, loaf along pretending to be terminals. On the LAN, intelligent workstations typically do all, or at least a significant part, of the application processing.

When you have a host-based LAN server with personal computers as workstations, "application processing is distributed rather than centralized," says Mike Durr, Novell's director of strategic marketing. "In addition, the aggregate processing power of the network increases greatly."

In effect, what you are doing is downsizing in a functional sense without necessarily changing hardware. Using an existing host as a server allows you to address software and architectural issues without changing hardware. Once software and architectural issues are resolved, you can determine whether a mini or micro makes the best hardware platform for each application.

Portable operating system vendors say that, from the user's perspective, LAN servers running a particular operating system will look much the same, whether they are micro-, mini- or mainframe-based.

This leap of processing also means downsized applications. Previously, users were limited to host software. Now, they can run LAN-compatible applications, whether they are on Apple Computer, Inc. Macintoshes or DOS, OS/2 or Unix machines.

Even if the ultimate goal is to downsize the server, portable

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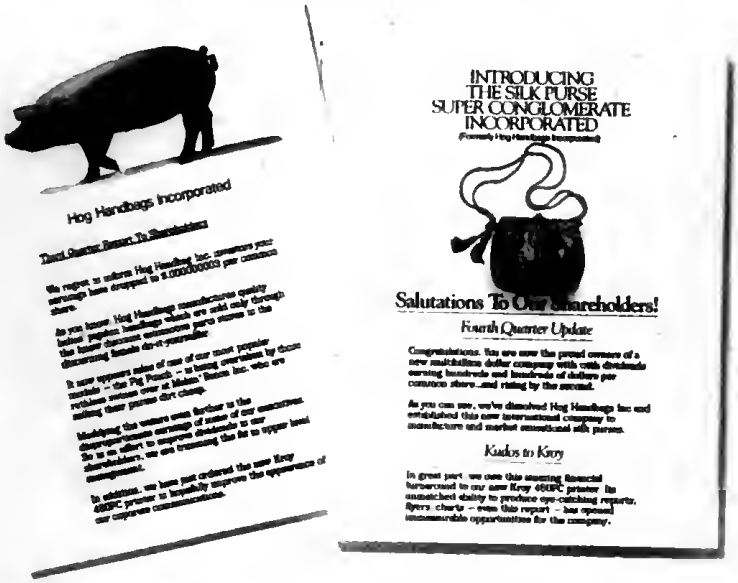
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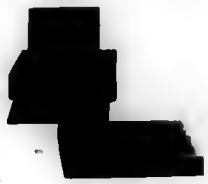

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LAN operating systems remove most of the risk from what can seem like a risky business. You have the option of either running a portable LAN operating system on a large-system host as an interim step or proceeding more aggressively, secure in the knowledge that there is a clear path of retreat.

If, for example, an application outgrows the LAN, it can move back to a mini server from a micro server without disrupting users and creating extra work.

The minicomputer will clearly be an important platform for running portable LAN operating systems. Portable LAN operating systems offer a large measure of integration between minis and LANs — in many cases, resulting in a happier union of the two technologies than has ever been seen before.

In the past, mini vendors tried to integrate PCs into their systems, and LAN operating system vendors tried to provide access to minis. The new portable operating systems show cooperative effort between mini and LAN vendors.

Hewlett-Packard has announced LM/X for its HP 3000 and 9000 minis. Data General Corp. has said that it will implement Portable Netware on its Eclipse MV family of minicomputers. Although AT&T has not made any official announcement, its "customers have expressed a keen interest in having LM/X on the 3B [minicomputer], and we have a keen interest in satisfying them," claims Robert Ziemann, product manager of Stargroup Server Software at AT&T Data Systems Group.

Similarly, Prime has not announced Portable Netware for minicomputers, but Ed McHugh, manager of distributed computing engineering, says, "We intend to make sure that Novell users can share files with our 50 Series minicomputers." This type of cooperation helps ensure that the values of both the mini and the LAN worlds will be preserved.

"Our customers use micros and DOS, but they still want a lot of Unix applications," says Don Sefton, Prime's group manager for LANs. The typical Prime customer wants to preserve the current Unix environment and add to it with the LAN, he adds.

IF AN application outgrows the LAN, it can move back to a mini server from a micro server without disrupting users.

"One of the ground rules in doing LAN Manager is to make sure that everything is compatible with all existing hardware and software, including remote gateways, routers, TCP/IP — everything," AT&T's Ziemann says.

However, minis are not the only platforms for portable LAN operating systems. The host that runs the portable LAN operating system can also be a supermicro.

Prime implementation

Prime has announced it is initially implementing Portable Netware on its EXL supermicro, based on the Intel Corp. 80386 microprocessor. Prime's Portable Netware will run, along with Unix applications, under Unix System V Release 3.

NCR reportedly will implement Portable Netware on its Tower supermicro, based on the Motorola, Inc. 68000. In addition, DG is scheduled to put Portable Netware on its Aviion computer, based on the Motorola 88000 microprocessor.

The first version of LM/X will run on 386-based PCs under the new combined Xenix/Unix System V operating system. AT&T reportedly plans to implement LM/X on its 6386 Workgroup System, according to Ziemann. In short, portable LAN operating system vendors offer opportunities for downsizing as well as "upsizing" and "samesizing."

This form of aid is available to users with Unix hosts. It is a good bet, however, that portable LAN operating systems will be appearing soon on many other hardware platforms. •

Hurwicz is president of the MTI Group, a data communications consulting firm in Nashville.

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Integrity vs. security: Avoiding the trade-off

IS may unwittingly be opening holes in MVS with software add-ons

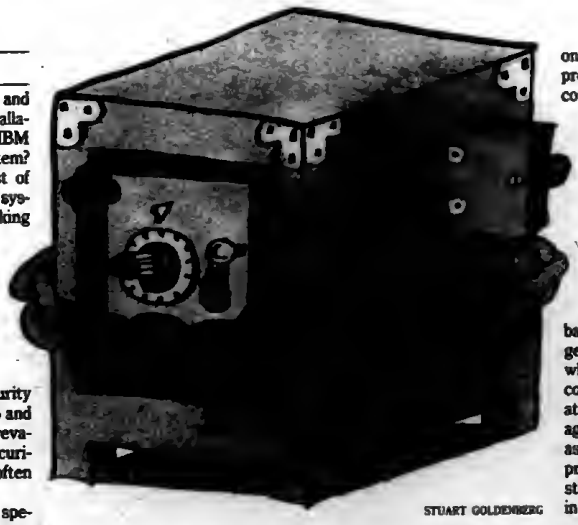
BY KEITH SOPER

Do you want security and control at your installation in using the IBM MVS operating system? Then why are most of today's information systems groups making changes to their operating systems that make security impossible?

"Not in my shop," you say? The fact is that this is occurring more often than people in IS realize. Indeed, the destruction of security and control within the MVS and VM environments is so prevalent that money spent on security and technical audits is often wasted.

An MVS installation has specific responsibilities for its copy of the operating system. But many mainframe software vendors do not understand these responsibilities. Thus, some software products are being designed and developed without regard for the coding rules they should follow.

Certainly, the products these vendors sell contribute to the IS environment. However, the products often include undocumented capabilities, faulty design or other code that causes abdication of an installation's responsibility for MVS.



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While it is an unfortunate situation, the problem can be identified and solved with the cooperation of IS management and the vendors that sell to the market.

What's happening?

IS may be operating under many misconceptions that contribute to this problem. The condition begins with an IS department selecting the MVS operating system — MVS/SP, MVS/XA or MVS/ESA — and security software such as IBM's RACF or Computer Associates, Inc.'s CA-ACF2 or CA-Top Secret. Most IS installations do not understand what the effect of using MVS in combination with security products has on other software products. As a result, misinformed software selections are repeatedly made.

IS must remember that changes to a single-user system, such as MS-DOS, are a security and integrity concern only to one user. But if these single-user systems are part of a network, then any change is a concern to all the network's users. This situation has its origin with the sharing of data and code throughout the network.

Similarly, with a multiuser, multitasking system such as MVS, a change is a concern to all users of the system. The change is of particular importance if it affects system security or MVS integrity. It does not matter whether all users of the system know about the change or just one person is aware of it. The presence of a specific product containing a code weakness — such as the one exploited by the Internet virus — can cause such a change and therefore represent a threat to an organization.

An IS installation may also assume it is using a version of MVS with no modifications. But, in fact there may be 20 to 100 program products — such as database management systems and general-purpose utilities — whose installation in the system could cause changes in the operating system. Many in IS management have developed a false assumption that these program products do not constitute an installation-selected change when, in fact, they do.

Just because your own technical support group has not directly modified MVS does not mean you have a vanilla version of the system. IS also assumes that if it pays money for software products, the product must play by the rules that govern MVS. This last assumption is false for many products.

What IBM gives you

IBM enables MVS installations to consider security a workable objective. The fundamental guideline that governs the MVS system is that all code will perform validity checking. This checking must be at a sufficient level to guarantee that a user program can never perform a function restricted to the operating system.

MVS operating system

- **IBM really does write these rules**
- **You are your operating system's keeper**
- **The deadly software combination**

Soper is a senior management consultant at the MIS Training Institute in Framingham, Mass. He is involved in the preparation and teaching of audit and security seminars, including "Auditing and Security Concepts for IBM's MVS Operating System" and "Auditing MVS Workshop."

functions are these fulfilled when a program is executing instructions while assigning privileged properties.

For MVS, these privileged properties include being assigned an operating system storage-protection key and having supervisor state — as opposed to problem state — machine access. Application programs are typically assigned problem state and have access to limited capabilities of the machine while in execution. But the operating system code can execute in supervisor state, which allows access to all capabilities of the machine.

IBM further provides a formal statement, the system integrity statement, that says what the company guarantees about the MVS code it has given you. The statement details for an installation how any piece of code will work in the MVS environment. The integrity statement is available from IBM as the Data Processing Division's programming announcement letter dated Oct. 21, 1981.

If an IS installation does not want or need operating system integrity, it can invalidate this integrity statement. Because the installation is the custodian of its copy of the MVS operating system, installation-selected changes can preserve MVS integrity, provided initially by IBM, or destroy it.

Integrity adherence

IBM develops and markets its primary software products with adherence to the integrity statement. But bear in mind that IBM sells and distributes several varieties of software products, including those developed by IBM employees outside the formal software development centers — field-developed programs — and those developed by users of IBM hardware and software — installed user programs. Plus, it is also possible to obtain software from IBM that is no longer supported because of lack of use or evolutionary changes in software or hardware. Not all of these special categories of software are guaranteed by IBM to preserve MVS integrity.

In any case, the integrity statement only applies to operating system enhancements. It is a guarantee that all MVS code you are using will continue to preserve the separation between itself and user code. IBM stands behind this guarantee in the same level that it stands behind its support for hardware. If an error in code invalidates any part of the integrity statement, IBM will consider this to be as serious as a hardware malfunction.

In simple terms, the actual integrity statement IBM provides says that user programs cannot do anything that is intended for the operating system to do, including the following:

- Bypass the hardware-provided storage protection for data and code.
- Bypass MVS password protection for data sets.
- Gain control with the same privileged conditions used by the MVS operating system.

IBM is only one of many companies that develops and sells software to enhance the MVS system. But because IBM cannot regulate other vendors, it has chosen to delegate to the MVS installation the specific responsibilities for additions to the software environment. As stated above, IS can choose to add software that will destroy MVS integrity, making security ineffectual. The MVS changes may be written by an installation's own personnel, purchased or obtained as free software products. To successfully operate a large MVS installation, IBM points out, IS management must ensure that all changes to the MVS

JUST BECAUSE YOUR OWN technical support group has not directly modified MVS does not mean you have a vanilla version of the system.

system preserve operating system integrity.

For their part, software vendors are selling products for MVS systems because of enhanced functional capability and compatibility with the existing environment. However, any change to MVS can, at the same time, destroy security and control of your environment. These undesirable side effects can result from either documented or undocumented properties that are a part of installing the change.

The untold story

Software companies that write a program for a particular function allow for many ways to obtain the desired end results. A company can choose to develop a code that follows all the established rules, or it can elect to ignore the rules.

One common reason for ignoring the rules is that a product may provide faster response or be more user-friendly without adherence. Additionally, ignoring the rules will usually necessitate less coding and testing while developing a product.

Some of the software characteristics introduced when software developers ignore the preservation of MVS integrity include the following:

- Supervisor routines added by a product that allow all programs to use and perform operating system functions.
- Program products with undocumented capabilities for bypassing security software.
- Programs or supervisor routines with fixed passwords that are a part of their code; these are infrequently changed or easy to determine.
- Incomplete checking of data provided by users that will allow access to resources belonging to the MVS operating system.
- Total system failure because of a product unpredictably storing data or code onto the MVS operating system.

The end result of these situations is that access-control software or any other security code can be bypassed.

To see what this loss means, you merely have to examine the negation of IBM's integrity statement. MVS has lost its integrity when there are interfaces available in the modified MVS operating system as a direct result of installing program products that allow all programs to do the following:

- Update or read into all areas in storage. This will allow changes to any data or code while it is in storage.
- Bypass all password checking or access-control checking that RACF, CA-ACF2 or CA-Top Secret provide. This will allow changes to any data or code while it is outside of memory.
- Execute with the same conditions as any MVS operating system code.

ONE COMMON reason for ignoring the rules is that a product may provide faster response or be more user-friendly without adherence.

A user taking advantage of what amounts to a flaw in outside products does not have to be a technical expert. He does not necessarily need to know some restricted access code. What a user needs to know to exploit an integrity hole is only that a particular product is installed. It then becomes a rather simple matter of obtaining a program that will capitalize on the integrity breach.

The destruction of MVS integrity might then allow unrestricted access to resources of value. What this means to an installation using MVS is that a door inadvertently built into the system can be opened by anyone. This person can be someone inside the firm or a knowledgeable and determined outsider.

With the influx of concern and publicity concerning viruses and worm software, it should be clear that installations must not install weaknesses in the operating system. Furthermore, installations should be correcting those holes that have been added in the past and that still exist. A virus or worm program could

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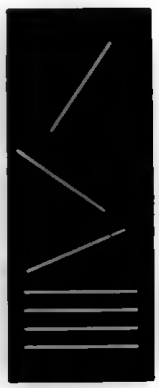

COMPUTERWORLD
PERSPECTIVES 1989

exploit any weakness by simply knowing that a certain product resides on your machine. This was the class of problem exploited by the Internet worm.

Corrective actions

All users of MVS should follow the same procedure to correct and control the introduction of integrity problems. First, you have to locate all existing changes to the current version of MVS. This can be done by a technical audit conducted by internal or external staff.

Second, you must determine whether all the changes preserve MVS integrity. This verification can be accomplished by contacting the suppliers of the products to verify that they support MVS integrity as defined by IBM. If they do, you should obtain a written statement that will attest to this fact. If a software vendor does not know what IBM's MVS integrity is, you should view its product with a great deal of skepticism.

If this situation exists, the vendor should either learn what is required to function in the system in which its products are installed, or else the installation should consider removing the product.

IF A software vendor does not know what IBM's MVS integrity is, you should view its product with a great deal of skepticism.

No rule-changing allowed

IS should not accept a vendor extending an argument that says it supports its own integrity. All software vendors whose products modify MVS in any way have no choice but to play by the integrity rules established by IBM — they cannot change them. Software vendors cannot provide integrity to their own products or fix existing holes by a change in documentation. They must provide code that ensures that their product will not allow a user program to perform operating system functions. This assurance must include all parts of their code.

If an MVS installation has a dependence on a product that does not support integrity — that is, does not provide the propef validity checking — the product should be removed. If this is not practical, a change to correct the integrity problems should be considered. This type of change — which involves changing the source code — could originate with the product's vendor or with your installation's technical support personnel.

Required products that cannot be removed and do not support separation between a user and system code can still be allowed in an installation as long as all parts are isolated and only approved users have access to the product. Any other actions by vendors and installations that modify MVS will leave an MVS system open to the security and control weaknesses described herein. Neither situation should be a part of the IS business.

In the future, all consumers of software products for the MVS environment should request product support for IBM's MVS integrity. The use of market pressure to correct existing problems and to obtain vendor support for operating system integrity is probably the best solution available. For example, user groups and professional organizations could pool their collective experiences and issue lists of products they have found that either preserve or destroy MVS integrity.

Each IS installation using the MVS operating system must decide if it wants security and control. If these attributes of the MVS operating system are important, then IS management cannot be indifferent about the preservation of MVS integrity. The other side of this problem is that software developers must design and develop products in a responsible fashion — one that preserves MVS integrity. The ultimate goal should be that when users require products with functional requirements that preserve MVS integrity, vendors will be able to satisfy these stipulations. •

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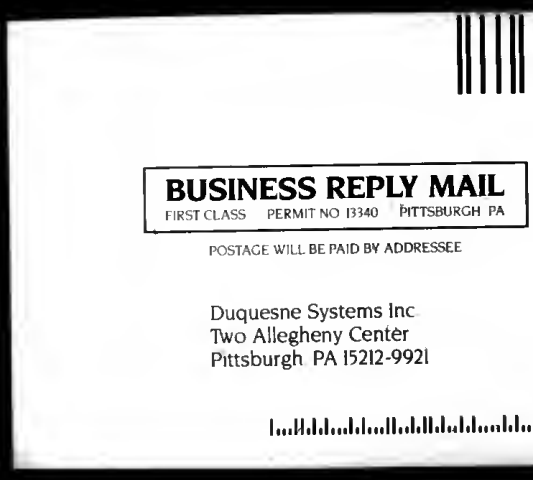

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INDUSTRY INSIGHT

James Daly

Sun's fall not so funny

When I was a kid growing up on the Jersey Shore, everyone had a skateboard. On summer evenings you could practically grow deaf from the sound of metal wheels tearing down on the streets.

But while most of us attained only a wobbly familiarity with the sticker-laden board, one boy named Stephen handled his like a man possessed. Wheelies were a snap. Handstands were no problem. The show-off could even spin on the darn thing without falling off. He was terrific. And we hated him.

One afternoon, however, Stephen met a pebble with his name on it and took a ragged tumble. Knees skinned and ego bruised, he scooped up his board and ran home. My friends and I watched nervously at first, then snickered and finally had an explosive laugh at Stephen's expense. Suddenly, Stephen wasn't so special, and we seemed a lot better than we really were.

Two weeks ago, Sun Microsystems fell off its skateboard. After more than seven years of popping wheelies around the computer industry, Chairman

Continued on page 88

Venture capital seeks new routes

BY NELL MARGOLIS
CW STAFF

Market observers who have cited a decline in venture capital available to technology companies are technically right — and functionally wrong, according to Stephen Gaal, a partner at Boston-based venture capital firm TA Associates.

"Yes, the absolute amount of fund money has declined since the 1987 peak," Gaal said, "but it's only a mild decline. There's still a lot of money out there."

According to Technologic Partners, a market research firm based in New York, 271 million venture dollars found their way to computer-related deals in fourth-quarter 1988, only a 2% drop from the fourth-quarter 1987 figure. Overall venture investing has hovered around $1.2 billion in each of the past three years, and early 1989 figures show no evidence that 1989 will break the chain.

However, while the dollars are not drying up, neither are they falling where they used to. Fewer deals were done in 1988 — 83, down from 100 in 1987. While staggering sums still made an occasional appearance — witness the $39 million garnered by CMOS memory circuit maker Vitelic Corp. — amounts tended to be more modest than in prior years.

Like the computer industry itself, the computer industry venture capital community is maturing. As it does, traditional venture capital routes are taking hits coming and going, Gaal said.

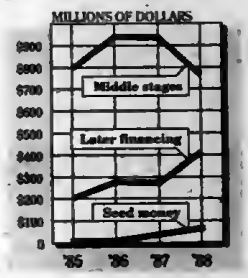
For starters, he said, "there isn't any big wave — no dynamic random-access memory, no microprocessor — that's going to float one company after another." What's more, Technologic President Richard Shaffer said, the absence of a sure thing isn't a situation likely to clear up quickly. "The PC isn't going to happen again," Shaffer stated.

Even more daunting than the question of how to get money into the right company, Gaal said, is the question of how to get it out. The venture capitalist's old dependable port of exit, the public market, is still in a post-crash state of skittishness toward technology — particularly the less tangible, more abstract software and services offerings

Continued on page 91

Less money in middle

Venture capitalists are smiling on start-ups and proven track records and holding back on firms in riskier middle stages of development



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Emery to head troubled SI

BY JAMES DALY
CW STAFF

MILPITAS, Calif. — Officials at embattled Systems Industries, Inc. (SI) said last week that President, Chairman and Chief Executive Officer Robert Duncan had resigned from the company "to pursue other interests."

Former Chief Operating Officer Paul W. Emery II will take the helm as president and chief executive officer, effective immediately.

It has been a difficult year thus far for the maker of Digital Equipment Corp.-compatible storage devices. Two months ago, it was hit with a patent-infringement lawsuit from DEC and in late May revealed a restructuring plan that would lay off 120 — or 22% — of its North American work force.

Emery is credited with engineering the firm's return to profitability in 1986, after it suffered financial difficulties during the 1984-'85 industry slowdown.

SI officials now hope Emery can be tapped for a repeat performance; last quarter the firm reported a loss of $25.9 million.

Japan hits U.S. on trade

Angry rejoinder warns of threat to trade talks

BY ELLIS BOOKER
CW STAFF

Japanese trade officials, bristling after last month's U.S. designation of their country as an unfair trading partner, are insisting their markets are open to U.S. suppliers of high-end computers, while warning that the U.S.' unilateral action, with its threat of future economic sanctions, could undermine existing multilateral free-trade talks.

Japan's Ministry of International Trade and Industry (MITI) Minister Hiroshi Mitsuzuka called the U.S. approach "contrary to the basic principles of the [General Agreement on Tariffs and Trade]." Japan, he said, has "no intention of entering into negotiations with the U.S. under the conditions imposed under Super 301." Japan, among others, was cited by the Bush administration for various trade violations under the so-called Super 301 provision of the 1988 Trade Act.

In addition to Mitsuzuka's response, MITI late last month addressed the supercomputer charges directly. U.S. super-

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Inside

- Storage Tek is on target in its return from bankruptcy. Page 88.
- Hewlett-Packard inches ahead toward integration. Page 90.

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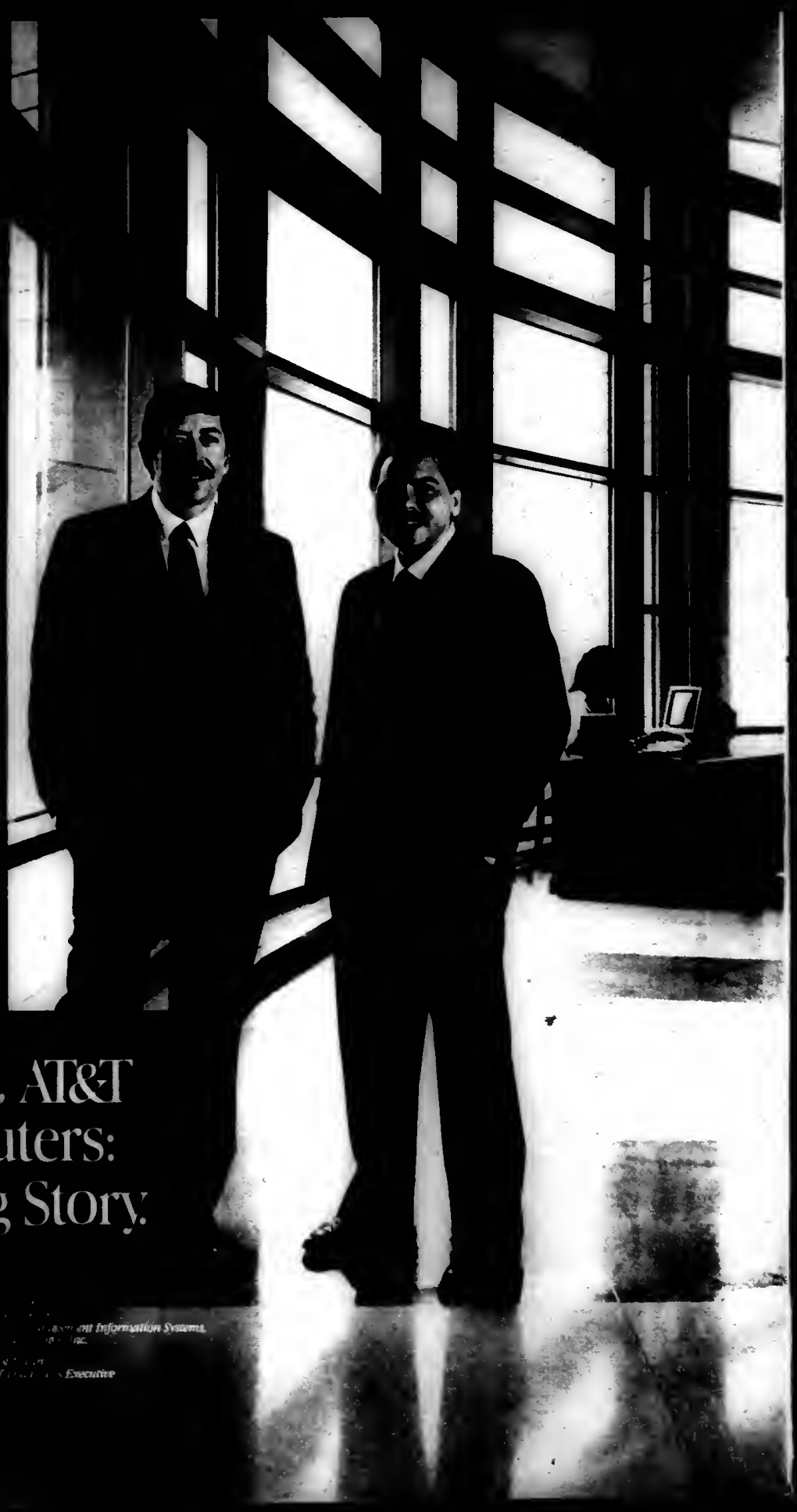

Allied & AT&T Computers: A Moving Story.

...ment Information Systems,
...Inc.

...Executive

Chicago, Illinois
February 23, 1989

Recently, Allied® Van Lines tied their corporate computer systems into one fast, efficient, distributed computer network. Allied's Chuck Werner tells AT&T's Frank Mastro how AT&T's Distributed Network solution saved money for Allied and improved agent service.

Frank: You guys are pretty tough customers.

Chuck: (Laughs) You bet! There were a lot of frustrated folks here; some managers had to use six terminals to get complete answers about billing, tariffs, etc. We'd seen the power of distributed networked computing when you linked Purchasing's AT&T 3B2 computers to Accounting's IBM host. We wanted more, and we wanted it fast.

Frank: Many companies are trying to manage multi-vendor systems and applications, but yours were particularly complicated.

Chuck: Believe it or not, we were running accounting on the IBM 3090, claims insurance on the Qantel, tariffs on the DEC PDP, and claims checking on the Wang.

Frank: None of the computers could talk to each other. People really needed six terminals to answer some questions.

Chuck: We had to have true distributed processing, and AT&T was the proven choice. You have a technical edge with the Information Systems Network. Because ISN allows transparent access to *all* our different systems, we could replace six terminals with one AT&T 605.

Frank: Now a claim or bill is just a hot key away.

Chuck: Plus ISN saved us money when we moved to our new data center. We didn't have to rewrite applications; we just moved everything we already had, and plugged into the ISNs through voice wiring paths. No one believed it—true investment protection!

Frank: I'll never forget *that* weekend.

Chuck: We now respond to 95% of our agents' questions in three seconds. And we're seeing cost savings already. AT&T 605 terminals each cost less than six months' rent on the old IBM terminals. We'll save a half-million dollars in expenses this year alone.

Frank: Plus everything runs over AT&T fiber-optic cable and twisted-pair wiring in your new building, instead of coax; you saved there, too.

Chuck: Right. We're delighted distributed networking customers of AT&T. We've had 3B2 computers in the field for years, handling shipment registration and accounting for agents. Your solutions are elegant: that's why your RFP won this time, over five other vendors. You know how to make our agents happy, and when they're happy, we're happy.

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AT&T
The right choice.

Storage Tek rises from reorganization ashes

BY RICHARD PASTORE
CW STAFF

LOUISVILLE, Colo. — In the two years since Storage Technology Corp. emerged from bankruptcy reorganization, the company's recipe of a conservative focus sprinkled with bold action has cooked up a palatable meat-and-potatoes dish, if not a pheasant under glass.

"They are certainly financially viable, but they are not what we call a strong credit," said Byron Walker, a senior analyst at Moody's Investors Service, Inc. "They can't afford costly errors and inefficient capital expenditures."

Storage Tek's Poppa *looks ahead*

But the company is no Milquetoast. It recently completed both its acquisition of Aspen Peripherals Corp. and a 10-to-1 reverse stock split. Innovative products such as its 4400 Automated Cartridge System — which last month notched its 500th sale since its debut last year — and a forthcoming new-generation direct-access storage device (DASD) help to portray a company willing to take calculated risks.

"They're beginning to invest very scarce resources very carefully," Walker said. "The key issue is that they have emerged from bankruptcy with a very focused, sober management group."

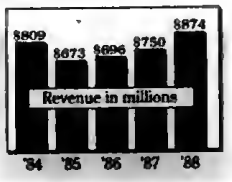
Focus is certainly a key word in the company's executive suite. "The single principal strategy of the product reorganization of '84 through '87 was to refocus back to tape, disk, solid-state disk and high-speed printers," said Storage Tek Chief Executive Officer Ryal Poppa, who took over the company after a failed foray into CPU design and production forced it to seek protection under Chapter 11 in 1984.

How does Storage Tek's performance jibe with its reorganization plan projections? "In terms of those things that we controlled — products coming to market, changes in the organization, cost structures — we're very much on target," Poppa said. Walker went on to confirm that the company has met its financial viability forecasts.

However, Poppa could not control IBM's Corporate Service Amendment, a service agreement that allows customers to break their contracts if IBM raises prices more than a specified percentage. It undercut Storage Tek's maintenance alternative and forced the company to take an unanticipated revenue cut to price its offering competitively. Today, however, Poppa said he feels "very comfortable being within 10%" of overall revenue projections. (See chart.)

The road back

Storage Tek has battled back to surpass its prebankruptcy revenue watermark



SOURCE: STORAGE TECHNOLOGY CORP
CW CHART: FRANK C. O'CONNELL

The friendly takeover of Aspen, an Aspen, Colo.-based, IBM-compatible tape cartridge system manufacturer with sales in the neighborhood of $10 million, cost Storage Tek about $47 million in common stock. The prize was Aspen's rack-mounted Summit Tape Cartridge Subsystem, targeted at the midrange OEM market and due to ship in the fourth quarter.

Storage Tek, which wants to expand its presence in the OEM market — now only 10% of its business — was a year away from development of its own version of the Summit product. Aspen presented "an opportunity to leapfrog and accelerate our program by about a year, and time to market is very important in this business," said Terry Hardie, Storage Tek's vice-president of OEM sales. Aspen, which has a work force of 120, "also provides a dedicated development group that is focused entirely on the needs of the OEM marketplace."

A glaring vestige of Storage Tek's financial collapse was removed when it completed a reverse stock split. The shares were selling for a paltry 1½ to 2 points, a consequence of a flood of 193 million new shares issued to creditors during reorganization. The reverse split merged every 10 shares into one; Storage Tek closed at 15⅝ last Thursday. From the financial perspective, "I think the whole issue of reorganization/bankruptcy is behind us," Poppa said.

Despite admittedly limited resources and flexibility, Storage Tek is funneling nearly 9% of its annual revenue into research and development. Among the projects brewing in the R&D labs are software systems designed to optimize the handling of stored data and assign it to the right device, currently a manual operation.

Though on a quest for more market share, the firm apparently has not forgotten its old customers. Steve Shultz, data processing manager at Aldrich Chemical Co. in Milwaukee, who operates five Storage Tek reel-to-reel tape products, had no complaints about service. Other users said support and pricing competitiveness have been stable in the past two years.

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Daly

CONTINUED FROM PAGE 85

Scott McNealy conceded that fourth-quarter earnings could be well below last year's results. Sun might even report a quarterly loss, its first ever.

Suddenly, the firm that habitually shoved yearly earnings gains of 60% in its competitors' faces was forced to walk with the great unwashed. McNealy blamed management miscalculations caused by — irony of ironies — a mucked-up computer system that confused orders and delayed business, but analysts questioned Sun's ability to handle both its meteoric growth and the transition to a new line featuring the much-touted Scalable Processor Architecture.

Meanwhile, Wall Street ran from Sun's stock faster than children out of a haunted house. Mercantile prophets supplied the I-told-you-sos. It seemed the only group clinging to an island of sanity was users.

"If we stopped buying from every vendor that had trouble, there would be nothing left in our shop," said Bush Karbal, who runs advanced technology support at Bear Stearns in New York.

But why all the fuss? Sun isn't the only glamour company to bang its head in public. Apple's earnings for the last quarter fell sharply because it stockpiled too many memory chips. The expensive chips caused the previously golden Apple to raise prices, an action that dampened sales. Similarly, Microsoft's revenue climb tailed off when upgrades to its Word software package were delayed.

Sun's tribulations should serve as an important reminder to golden boys like Compaq and Oracle that the first law of business is that nothing lasts forever. Maybe Sun got intoxicated by the sweet smell of its own success and overestimated the willingness of customers to board the Sparc train. Or the pressure may be taking its toll. Only last month, Executive Vice-President Bernard Lacroute said he was resigning because he needed a break from "the hectic pace" of the company.

One need only look back a few years to discover a frighteningly similar scenario. In mid-1983, DEC was in administrative quicksand after discovering its forecasting, order processing and production schedules were in turmoil. So many orders were scrambled that earnings dropped 72% in the first quarter of 1984. Morale plummeted as fast as the company stock. A few quarters later, however, DEC came back with one of its most successful years ever.

Hopefully, Sun will also dust itself off from its comeuppance. Its batting average may no longer be 1.000, but I'll wager the firm was suddenly imbued with a quick and deep understanding of the frustrations resulting from fouled-up systems. Positive changes are already in the wind: Customers can expect simplified order forms in the near future, and more paring is certain to take place.

Sun may have skinned its knee, but the industry should not blow this misstep out of proportion. The race, after all, is often not to the swiftest but to the one most willing to adapt to a changing environment.

Daly is a *Computerworld* senior writer.

IN BRIEF

Rocky Mountain low

US West recently announced plans to close its Denver-based software subsidiary, **US Knowledge Engineering, Inc.** The subsidiary, a parent company spokesman said, failed to live up to expectations and no longer fits within US West's strategy.

But how do you say 'CASE' in French?

Front-end computer-aided software engineering player **Index Technology Corp.** has added a Paris-based, French subsidiary to its overseas strongholds in Australia and the UK.

We're No. 2

According to recent figures from San Jose-based market research firm Dataquest, Inc., **Compaq Computer Corp.** last quarter streaked past **Ing. C. Olivetti & Co.** and **Apple Computer, Inc.** to become the second largest supplier of personal computers to the European business market, ranking behind **IBM.**

Divide and conquer

In search of greater flexibility, Boca Raton, Fla.-based **Siemens Information Systems** has restructured into a holding company with three independent divisions: a communications division, a communications systems and networks group and a new peripherals and terminals group imbued with the mission of expanding Siemens' U.S.-based computer-related business.

New Newbridge

Herndon, Va.-based communications equipment vendor **Newbridge Networks, Inc.** has acquired Calmos Systems, Inc. of Ontario. The Canadian company, renamed **Newbridge Microsystems**, will operate as a separate division, designing and marketing semiconductor components and subsystems for internationally distributed data communications and processing products.

Courtship rituals

IBM-based software player **Boole & Babbage, Inc.** will pay an undisclosed amount to acquire network management company **Avant-Garde Computing, Inc.** — provided, among other conditions, the settlement of certain litigation pending against Avant-Garde. The proposed acquisition, said a Boole spokeswoman, would complement the company's continuing surge into the network management area.

Workers miffed at M&D limits

BY STANLEY GIBSON
and JEAN S. BOZMAN
CW STAFF

NATICK, Mass. — The formation of an elite consulting group at McCormack & Dodge Corp. has brought about restrictions — under which some employees are chafing — intended to keep members of the group under M&D's wing.

Before joining M&D's Professional Services Organization (PSO), employees must sign a nonsolicitation agreement, of which *Computerworld* obtained a copy. The restriction prevents defections to paying M&D customer accounts for 18 months. Consultants will be able to join the company's client firms, provided they do not consult about M&D software, said Jim Alberg, M&D general counsel.

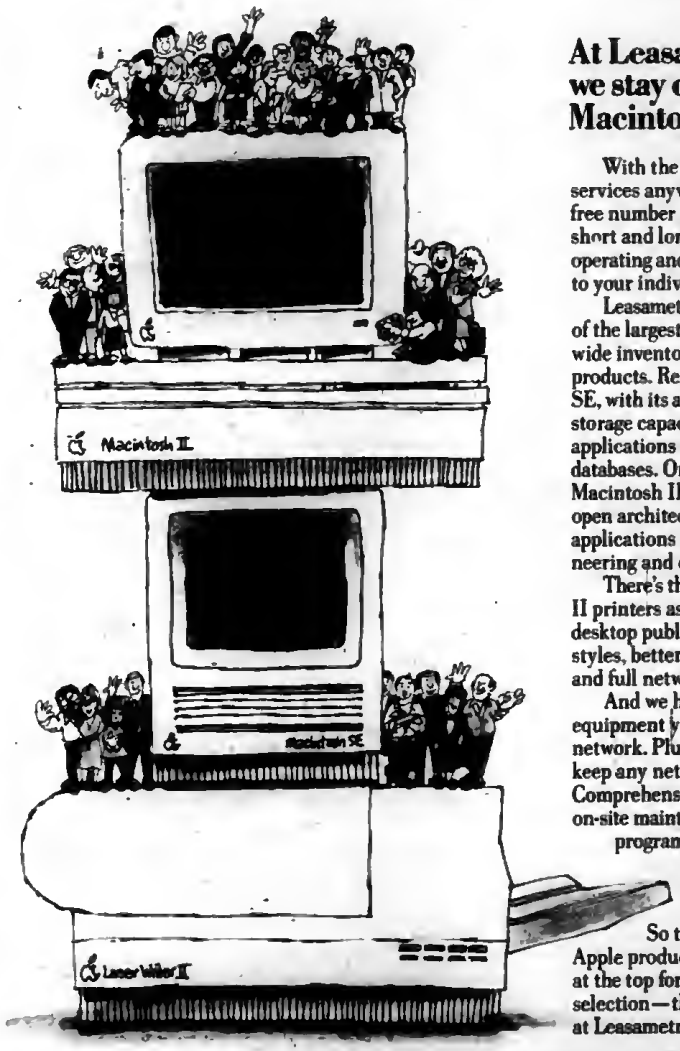
The firm has been stung in the past by the departure of some of its consultants to user firms. M&D's policy mirrors those of several other computer services firms.

According to M&D Corporate Vice-President Hank Holland, no employee will be forced to sign the document. However, employees who sign it stand to make significantly more money as M&D consultants than they would as one of the firm's 114 field-support engineers, Holland added. So far, the PSO has 12 employees; however, Holland said the roster should grow to 35 nationwide by year's end.

Legal precedent has held such agreements invalid absent a showing of gain to compensate for the limitations.

"The benefits have to be a real advantage over the original conditions," said Esther Roditti Schachter, a partner in the law firm of Schachter, Courter, Purcell & Kobert in New York.

One disgruntled employee told *Computerworld* that several consultants who balked at signing have already left the company. However, M&D said it could trace just one resignation to the policy. "No one wants to leave," the source said. "But they feel that if they sign the form, they wouldn't be able to work for an M&D customer."



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New HP group aids in systems integration

BY ELISABETH HORWITT
CW STAFF

CUPERTINO, Calif. — While still insisting that it has no plans to become a systems integrator in its own right, Hewlett-Packard Co. has quietly formed an organizational structure designed to formalize, coordinate and heighten its ability to provide integrated solutions in cooperation with various partners.

"We have decided to take a formal stand on our complementary role" in systems integration, said Dennis McGinn, general manager of HP's Industry and Accounts Marketing Operations.

McGinn's organization was formed last April and is made up of the following groups:

- Strategic Business, which includes specialized people who handle "large, complex strategic business opportunities."
- Industry Programs, which is a group directed at specific vertical industries in which HP has already developed expertise, such as aerospace, manufacturing, electronics and telecommunications.
- The Partners Program, which addresses partnering activity with major systems integrators, as well as with many of the major accounting firms.

HP's McGinn *wants group based on partnership*

The glue for all of these groups is the Complementary Integration Operation, run by a staff of 175 to 180 people who have "worked on large projects and can take a complex networked application requirement," as well as bring together various resources to create a solution, McGinn said.

Such resources would typically include standard HP product divisions combined with systems integrators and third-party software and hardware organizations.

In forming this interconnected organizational system, HP is consciously targeting a market that is different from the one aimed at by such enterprise suppliers as Digital Equipment Corp. and IBM or such big-systems integrators as Electronic Data Systems Corp., McGinn indicated.

"Although some customers force us to be in the front row, we would not want to be the primary contractor in most instances," he said.

Strategic alliances

Instead, HP plans to form alliances with a select group of third parties whose expertise or products complement the computer vendor in key areas of opportunity. The percentage of HP's deals in which at least one other vendor has been involved is now "certainly greater than 50%," McGinn said.

The new organization furthers a strategy that HP pioneered some years ago, that of providing industry-specific architectures for certain vertical areas, said Bruce Richardson, a vice-president at Cambridge, Mass.-based consulting company Advanced Manufacturing Research, Inc.

Both IBM and DEC should take a page out of HP's book in the area of third-party relationships, according to Richardson.

First, HP's current strategy of choosing a limited, best-in-class set of third-party vendors in a given vertical market has enabled the company to consistently provide better support and information to customers than can DEC, whose support staff must keep track of "huge third-party catalogs, so you know you're on your own when you want a recommendation," Richardson noted.

Second, HP has already reaped significant rewards, in the form of customer contracts, through bonding with third parties, Richardson said. "Once you work on one or two projects together, goodwill develops, and they recommend you," he explained.

In contrast, IBM and DEC tend to scare off potential partners by trying to provide everything themselves, Richardson said. DEC has alienated certain former partners by turning around and competing with them, he added.

For example, DEC just won a $50 million contract from Boeing Co. at the expense of Arthur Andersen & Co. — which was bidding DEC equipment under a separate agreement, Richardson said.

"Arthur Andersen," he speculated, "is likely to be more guarded in recommending DEC in future jobs."

IN FORMING THIS interconnected organizational system, HP is consciously targeting a market different from that aimed at by such enterprise suppliers as Digital Equipment Corp. and IBM or such big-systems integrators as Electronic Data Systems, Inc.

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Government Policy Initiatives Affecting Public and Private Sector (Lynn McNulty, Assist. Dir. Computer Security, NIST)

Technology Thrusts (Dr. Roger Schell, Vice Pres., Gemini Computers)

Industry Initiatives (Lt. Gen. (Ret.) Lincoln Faurer, Pres., Corp. for Open Systems)

Data & Info. Security: Issues & Emphasis (Ronald Knode, Exec. Scientist, Atlantic Research Corp.)

Computer Viruses (John McAffee, Chairman, Computer Virus Industry Assoc.)

Networks of the Future (Douglas Keman, Mgr. Strategic Product Mngmt., Novell)

Protecting Technological Resources (David Stevens, Mgr., Computer Protection Program, Lawrence Berkeley Labs)

Standards & Security in the Future (Stephen Walker, Pres., Trusted Information Systems)

Panel Discussion (Dr. Barbara Cerny, DOE; Dave Bailey, Los Alamos National Labs; Leslie Chalmers, ABA; Ken Cutler, American Express TRS; Fred Farmer, Marriott Corp.; Joseph Edwards, NYNEX ISG)

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Venture

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that increasingly supplant hardware as the areas for entrepreneurs to tackle. "Unless you're a really strong company, or unless you're desperate, public isn't where to go," Shaffer said.

There is a downside legacy of the mid-'80s entrepreneurial boom. "Everybody you know knows somebody who failed with a technology company," said Bob Kniffin, a founding partner of Cambridge, Mass-based venture capital consulting firm Cooper, Raburn & Kniffin. The fact that they do tends to stop both potential venture capitalists and potential venturers in their fast tracks.

Even with so many of the old rules off, Shaffer noted, venture capitalists are scrambling — not to get out of the game, but to find new ways to play it, such as the following:

- Find a finder: The brainchild of three several-time computer industry entrepreneurs, Cooper, Raburn & Kniffin (see story below) acts as a "finder" for large venture capital companies. Only after the consulting firm has helped venture capital companies hedge their bets by scouting out a likely deal — assembling a management team and shepherding the start-up through its initial development and marketing stages — do the venture partners actually invest.
- Find the technology: Another new-breed "finder," Los Angeles-based Cole Gilburne Fund, takes a contrarian approach: Eschewing the recent venture community obsession with experienced management, this firm — itself a start-up — is on the lookout for exciting technology. You supply the sizzling science; it'll bring the business acumen.
- Find the niche: The current combination of abundant investment money and fewer sure ways to realize on the investments points directly at increasingly refined niche marketing.
- Find the turf: In what may be the ultimate refinement of niche market to date, venture capital funds are being created to target enterprises in specific geographic areas, ranging from Washington, D.C. to the Philippines to Oklahoma.

Consultants *Cooper (left) and Kniffin (right) confer with John Hirschtick of client company Premise*

Fetching firm

For many players in the venture capital industry, raising funds is no problem; the complaint heard these days is that a worthy deal is hard to find. Many find this an irony; Bob Kniffin, Vern Raburn and Phil Cooper found it an opportunity. Since the fall of 1987, Cooper, Raburn & Kniffin — the company and the founders — have been acting as "finders" for two large venture capital firms.

"You could call us half venture capital, half early-stage management consultants," said Kniffin, trying to put a label on the blend of services that he and his partners — all veteran computer industry entrepreneurs with plenty of experience on the hat-in-hand side of the venture capital desk — have been supplying to the likes of Vista Ventures, Harvard Management and Kleiner Perkins Caufield & Byers.

"Our mission is to be the venture firm's eyes and ears," Kniffin said. "First, we identify strategically interesting markets. Once we target a market, we find a promising company within it."

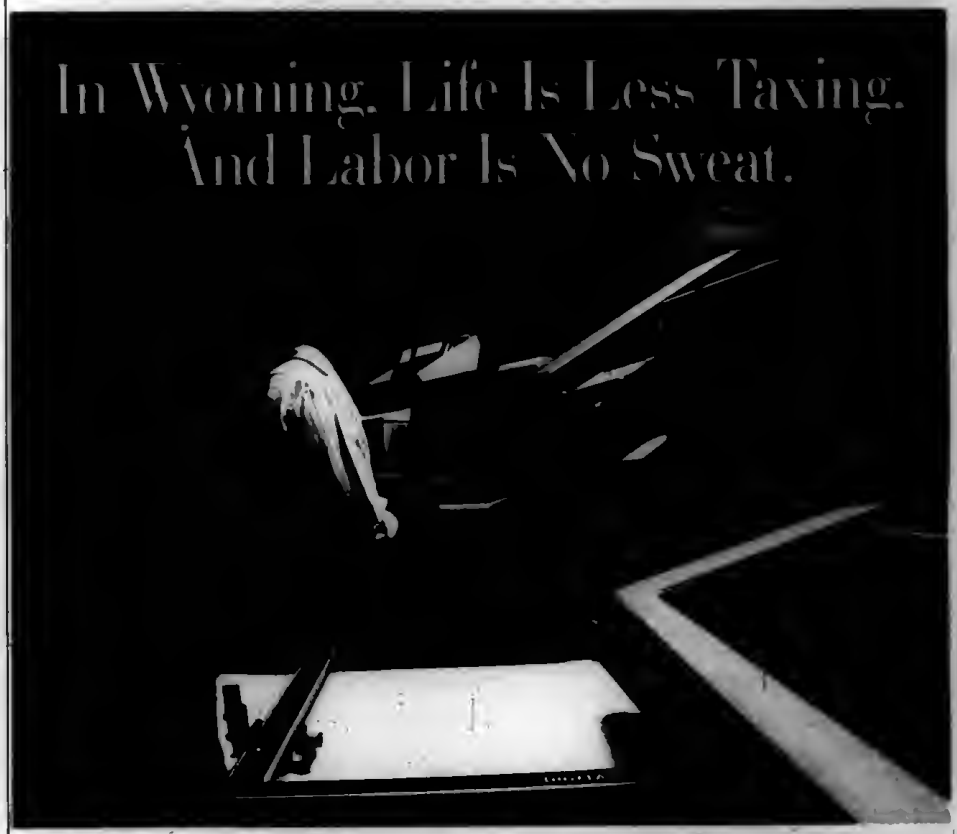
They then supply a block of consulting time — 18 months is typical, Kniffin said — to shepherd the fledgling company through its start-up. Only then do the venture capitalists make their first-round investment, which, at that point is effectively a second-round investment and a considerably hedged bet.

What Cooper, Raburn & Kniffin get from the deal is common stock in the new company — generally between 5% and 10%, Kniffin said — an ongoing fee, paid by the venture capitalists, and the fun of staying in their old game while playing new positions.

With Cooper Raburn flagship companies such as Premise, a mechanical computer-aided design software vendor, now marketing its first products, Kniffin et al are pleased with their experiment.

"What we're doing," Kniffin said, "is almost returning to the roots of what venture capital started out to be 30 years ago."

NELL MARGOLIS



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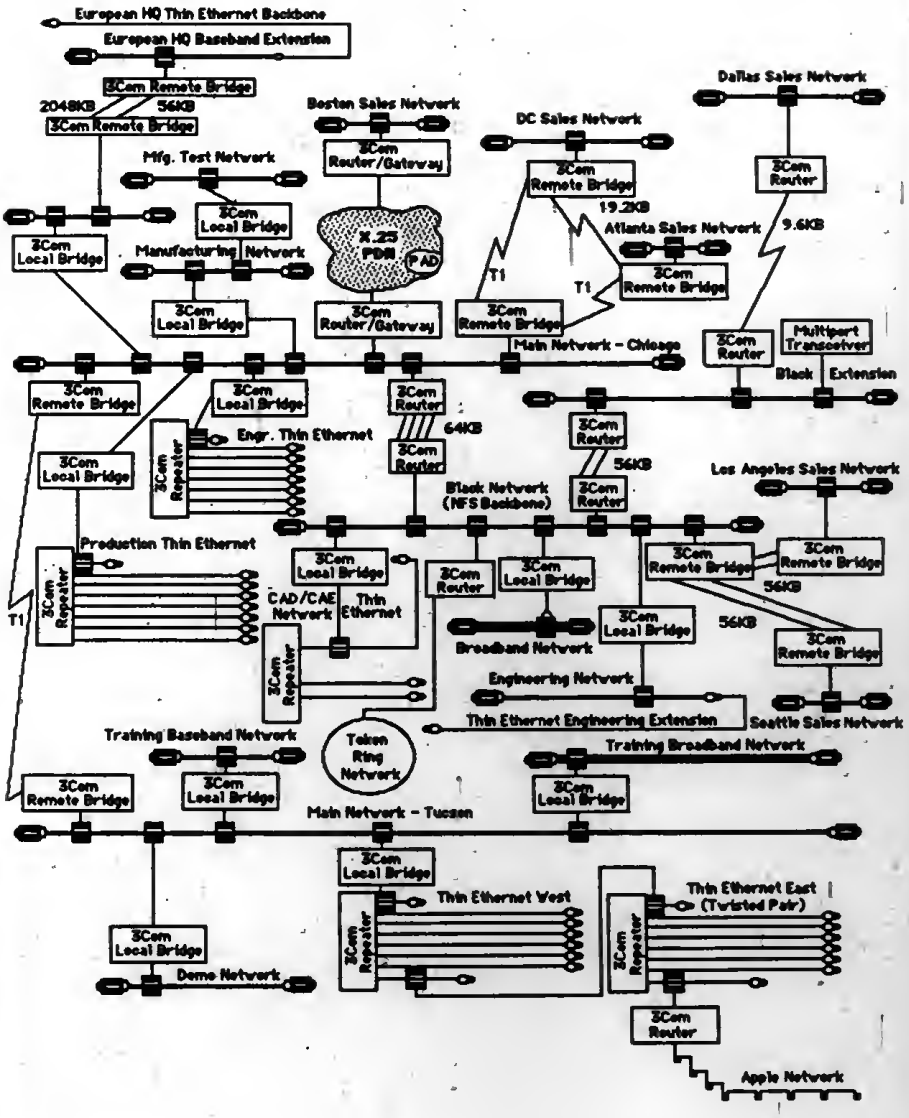

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computer vendors such as Cray Research, Inc. have exported to Japan, and the Japanese government is "already practicing nondiscriminatory trade," the response noted.

What the MITI response did not address, however, were structural impediments to foreign vendors, such as late notification of requests for proposals, which Cray, for one, has complained about in the past (CW, June 5). Cray also has complained that its market share in the Japanese public sector is just 3%, compared with its 70% to 80% market dominance elsewhere in the world.

This disparity is natural, said an official in Japan's trade office in New York, given the number of supercomputer makers in Japan. While Cray is arguing on pure statistics, "you must take into account that in Japan there are many competing supercomputer makers, so the situation is different from the U.S. or Europe," he said.

At least one U.S. supercomputer maker, however, seems happy with its experiences in Japan. Richardson, Texas-based Convex Computer Corp., which entered the Japanese market in 1985, said it has sold its products "without government accords and political pressure" and has 60 installations in Japan to date.

CEO Robert J. Paluck attributes this success to Convex's sensitivity to Japanese preferences.

For example, Convex elected to use a Tokyo distributor rather than its own direct sales force and staffs its year-old Japan subsidiary — which handles sales support and service — with Japanese personnel.

Paluck conceded that his company's supercomputers, most of which have been sold to the Japanese commercial sector for industrial design applications, do not reach the top end of the supercomputer performance curve and therefore do not confront the kind of competition Cray faces from the likes of NEC Corp., Hitachi Ltd. and Fujitsu Ltd.

Regarding the prospect of trade sanctions against Japan, Paluck urged caution: "We've got to be careful. We really run the risk of irritating Japan to the extent that it will retaliate. All supercomputer companies in this country are dependent on Japanese semiconductors and technology."

The race is on

On the domestic front, various government agencies appear to be racing to strengthen their links with the supercomputer industry.

Last week, the Pentagon's Defense Advanced Research Projects Agency (DARPA) said it would "forge new ties with the U.S. supercomputer industry" and would collaborate with Cray on supercomputer technology.

The collaboration will include the transfer to Cray of DARPA's new Mach software, a multiprocessor, parallel computation operating system.

DARPA is already sponsoring other supercomputer projects, including Beaverton, Ore.-based Intel Scientific Computers' plan for a system based on the Intel Corp. I860 "supercomputer-on-a-chip" processor and the massively parallel Connection Machine being designed by Thinking Machines Corp. in Cambridge, Mass.

In addition, although DARPA has previously promoted programming languages Ada and LISP, it is now trying to ensure the future of Fortran in the supercomputer universe. It is funding Rice University in Houston to build on Fortran's code and has turned to Encore Computer Corp. in Marlboro, Mass., to develop technology to allow parallel systems to use existing Fortran programs and the Mach operating system.

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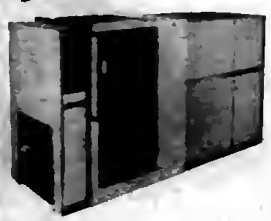

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Intellicorp, Inc. announced revenue for the third quarter ended March 31 of $5.5 million, compared with $5 million in the previous year. It reported a net income of $96,000, compared with a net loss of $269,000 in the like period a year ago.

Bytex Corp. announced revenue for the first quarter ended March 31 of $8.6 million. Revenue was essentially level with reports in the first quarter a year ago. Profits were $498,000, compared with the like period a year ago.

Landmark Graphics Corp. reported revenue for the third quarter ended March 31 of $12 million, a 72% increase over the $7 million in the same quarter last year. Profits were $1.4 million, compared with $600,000 last year.

Arix Corp. announced revenue for the third quarter ended March 31 of $22.5 million, compared with $14.4 million in the previous year. Profits were $1.4 million, compared with $765,000 reported in the previous year.

Maxim Integrated Products announced revenue for the third quarter ended March 31 of $10.6 million, compared with $7.2 million last year. Profits were $1.5 million, compared with $836,000 in the like period a year ago.

Comshare, Inc. announced revenue for the third quarter ended March 31 of $21.8 million, compared with $19.5 million last year. Profits were $1.2 million, compared with $813,000 reported in the like period a year ago.

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* The Wall Street Journal (1987) — "Survey of the Information Processing Marketplace."
* The Adams Co. (1988) — "Information Systems Management Study."

IS banks on financial managers

Managers find that bottom-line skills can provide a boost toward the top

BY JANET MASON
SPECIAL TO CW

The impact of information systems on a corporation's bottom line has always been difficult to quantify. Lately, however, some companies have been getting a better grip on financial aspects of their systems by appointing IS controllers and hiring IS managers with accounting experience.

This trend is driven in part by annual growth of IS expenditures that exceed those of other corporate departments, according to managers and consultants. Another factor is the growing complexity of hardware and software investment decisions.

A better understanding of the impact of information technology on a company's bottom line benefits the IS group as well as the firm, notes Tom Lewis, president of Chester, N.J.-based Technology Management Group, Inc.

"Without cost justification, MIS is viewed as overhead, making it difficult to justify growth," Lewis says. "A good finance person will help put together a business case for senior management. It's too much to expect an IS manager to have great expertise in accounting."

About 60% of IS organizations consisting of 100 or more employees already employ a dedicated financial controller, according to Terence Quinlan, founder and president of San Francisco-based Financial Management for Data Processing Association, which was founded a year ago and has since grown to 900 members.

Quinlan says he has seen the trend toward employing financial specialists in IS unfold over the past 10 years. Among the forces driving the trend are the use of chargeback systems, under which IS groups bill user organizations for services rendered.

The IS controllers usually come from a traditional financial background and report to the senior manager of the IS group, says New York-based executive recruiter John Davis.

They tend to work in industries in which heavy transaction requirements require extensive computing power, such as banking, insurance, financial services, retailing, transportation and, increasingly, utilities, Davis says.

The IS controller is responsible for tasks such as evaluating contracts and licenses, lease vs. buy decisions, deferred payment arrangements and future costs of projects.

Along with handling these duties, Joe Cloonan, controller of MIS at The Gillette Co. in Boston, acts as a liaison between IS and its user groups. In this capacity, he keeps the operating divisions informed about new technological developments in the IS group, he says.

Cloonan joined the 200-person headquarters IS group from a traditional accounting background. He reports directly to the corporate director of MIS and works with the director's top managers.

Cloonan says he moved into IS because he recognized its strategic importance to the company. Because he is familiar with the operating divisions, he also assists the IS department in aligning its goals with the business of the end users.

Although Cloonan gained some exposure to IS through his position in the accounting department, he picked up most of his new knowledge through an on-the-job orientation and several outside seminars.

"What it comes down to is a sharing of information," he says. "I learn more technical information by working in IS, and the IS people learn more about the financial aspects of the business by working with me."

The IS group at Alco Standard Corp., which includes 600 people worldwide, takes another tack, splitting financial responsibilities among five top managers. However, the IS unit usually hires managers with a background in accounting, according to Maunallen Gregory, vice-president of MIS at Alco. The company, based in Valley Forge, Pa., deals in paper, office products and food services.

The five senior managers on the headquarters IS staff develop the budget, calculate chargeback and produce financial statements. Assigning them to do so helps the managers better understand various aspects of the business, according to Gregory. "They are better equipped to communicate the financial aspects of the system to end users," she says.

Gregory contends that accounting and auditing are good preparation for IS because those disciplines can provide exposure to all aspects of an organization. Another benefit of moving to IS is that IS tends to offer higher salaries, she adds.

IS organizations consisting of fewer than 100 employees are more likely to handle their finances without the help of specialists. "Since we have a small shop, we don't need a person on staff who deals solely with finances," says Albie Collins, vice-president of a 90-person information services organization at the Home Box Office (HBO) division of Time, Inc. in New York.

However, at HBO a working knowledge of accounting principles is required for promotion to senior IS management, Collins says. Most people acquire that expertise on the job. However, accounting seminars are available for nonfinancial people.

HBO's senior IS managers develop their own strategic financial plan using corporate guidelines and submit to senior management a "shopping list of what we'd like to do," Collins says. "Our managers are familiar with the technology and are also adept at dealing with cost," he contends.

> "A GOOD FINANCE person will help put together a business case for senior management. It's too much to expect an IS manager to have great expertise in accounting."
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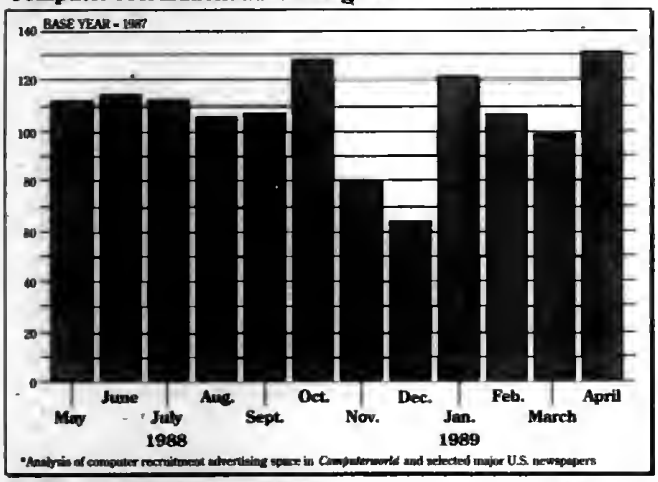
Computer recruitment advertising index*



*Analysis of computer recruitment advertising space in *Computerworld* and selected major U.S. newspapers

SOURCE: CW PUBLISHING, INC'S RECRUITMENT MARKET RESEARCH DATABASE

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data processing

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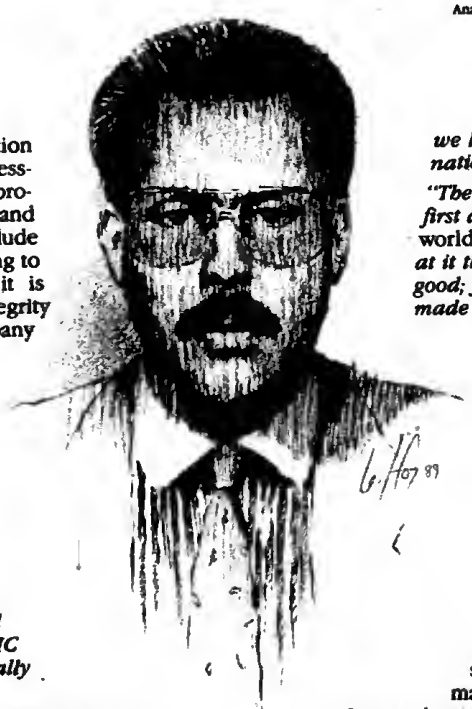

Analysts International Corporation (AIC) is a nationwide data processing consulting firm that provides programmers, analysts, project leaders and more to client companies that include many from the Fortune 100. According to Corporate Recruiter David Yancy, it is AIC's dedication to excellence, integrity and innovation that helped the company realize $70 million in revenues in 1988 — and should propel it to over $90 million in 1989.

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Westminster College is a private coeducational liberal arts college affiliated with the Presbyterian Church, USA and is located 17 miles east of Youngstown, OH and 70 miles north of Pittsburgh, PA.

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One step ahead of disaster

True readiness goes beyond the handshake deal and into hot, cold sites

IN PERSON

Jack Bannan, manager of information security at General Electric Co. in Cherry Hill, N.J., and president of the Delaware Valley Disaster Recovery Information Exchange Group, has worked in information systems for 27 years. He also worked in disaster recovery for 11 years at GE and RCA Corp. *Computerworld* Senior Writer David Ludlum recently spoke with Bannan about disaster recovery services.

GE's Bannan, *IS manager, advises companies to buckle up*

How well prepared are most Fortune 500 companies for information systems disasters?

Relative to five years ago, I would say they're a hell of a lot better off than they were. Recent events have raised the awareness of the people at the top of these organizations of the need for disaster recovery. When they read about disasters, I'm sure they send word down to the lower echelons that they want to know how well protected they are.

Are companies adequately protected?

I would say most of them are. There is a trend, however, toward centralization again — a lot of companies pooling data centers into a single one for economy-of-scale purposes. The problem is you start to put all your eggs into one basket. You have a single point of failure.

Over the years we moved away from that, and now I see we're moving back in that direction. When you have a very large data center, you present some unique problems in terms of disaster recovery, because you're actually larger than any place that can back you up.

What can those organizations do?

The only thing I can tell them is, you've got to build a fort. They've got to reduce the possibilities of a disaster to as low a point as they can with things like fire protection and access control. But that's expensive.

What are the typical means of protection?

There's the cold site (a 'shell' data center ready for installation of computers) and the hot site (a stand-by, fully equipped data center). And I hate to even mention this, but I imagine a few people still have reciprocal arrangements, which I don't think work anymore. That's the old handshake business where a guy down the street has a computer with some time on it and you have a computer with some time on it and you say, 'If you have a problem I'll back you up, and if I have a problem you back me up.'

Ten years ago that probably could work in certain situations, but because of the complexity of computers today and telecommunications, I just don't see reciprocal arrangements working at all, certainly not with a reasonable-sized computer.

Some companies build their own recovery center. They use it for noncritical work, and it serves a dual purpose — it's also a hot site for their major center. That's an expensive way to do it.

How much protection is enough?

That's a cost factor. Some people still take the attitude that 'it ain't going to happen to me.' I wouldn't be suprised if some are still doing what companies were doing 10 years ago, which is developing a skeleton plan and using it as a ruse for the financial auditors. That's not working as well as it used to because the EDP auditors examining plans today are more sensitive to these issues.

Other companies look at how quickly they need to recover. If they have to be back in business as quickly as possible — like banks and brokerages houses — then their investment in recovery is going to be much more than companies that feel they can exist without a computer for a week.

What should organizations look at when buying these services?

In the case of a hot site, a big issue is testing time. Most of the providers permit that. They generally allow 48 hours a year that you can take any way you want — six eight-hour shots or one 48-hour shot.

You have to make sure a hot site can accommodate your telecommunications requirements, that it has the necessary front-end equipment and the necessary telephone lines and termination lines.

There is another aspect of hot sites you have to be aware of. If there's a regional disaster like the fire in Hinsdale, Ill., last year, where a number of companies are adversely affected by the loss of their computing capabilities, your hot site may not be available to you. Somebody may have gotten in there before you.

In that case, the major service providers have more than one hot site, but you may be faced with the prospect of recovering at a location where you haven't tested yet.

With a cold site, if it's an arrangement where several companies share the cost, you have to think about that too in the event of a regional disaster: Who gets in there if the site is only large enough for one computer? Regional disasters are really the Achilles heel of disaster recovery, because all of a sudden half a dozen companies have to recover at a time.

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The BoCoEx index on used computers

Closing prices report for the week ending June 2, 1989

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XT Model 089	$1,200	$1,400	$950
AT Model 099	$1,650	$2,000	$1,500
AT Model 239	$1,800	$2,100	$1,775
AT Model 339	$1,975	$2,375	$1,800
PS/2 Model 50	$2,150	$2,400	$2,000
PS/2 Model 60	$3,075	$3,100	$2,500
Compaq Portable I	$725	$750	$650
Portable II	$1,900	$2,100	$1,750
Portable III	$2,875	$2,950	$2,300
Portable 286	$1,700	$1,975	$1,675
Plus	$900	$1,200	$900
Deskpro 286	$2,035	$2,350	$1,800
Deskpro 386	$2,625	$2,900	$2,500
Apple Macintosh 512	$500	$775	$300
512E	$675	$975	$800
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Toshiba T3200	$2,800	$3,000	$2,725
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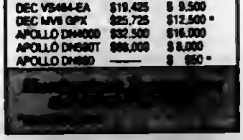

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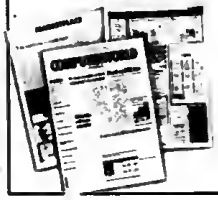

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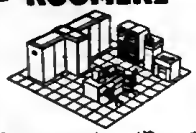

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Effective executive PC training

Overcoming three stumbling blocks can clear the way to user acceptance

BY NAOMI KARTEN
SPECIAL TO CW

What sort of personal computer training should top executives receive? Should they be given hands-on instruction as a means of improving their understanding of the technology? Should they learn a smattering of product mechanics to better understand what their subordinates are doing?

Given the answer to these questions, what are the problems in teaching the executives? Is it worth the effort?

Executives' use of PCs is still limited. For some, the PC remains a status symbol — a credenza-top computer rather than a desktop computer. It is the latest model, but it is rarely used. For other executives, the PC confers status through its absence: "I have people to do it for me," is their refrain.

Even those executive suites in which PCs are found usually limit the usage to electronic mail, push-button quality executive information systems and some word processing.

Thus, many top managers know little about PCs. In some organizations, the result is expectations and assumptions about computing that are flawed or downright erroneous. A primary benefit of hands-on PC training is that it can help top managers appreciate the power and potential of the machines.

As resistant as executives may be to learning about PCs, it is not uncommon for them to react with a great "Aha!" when shown a spreadsheet recalculation or database query for the first time. This reaction often translates into newfound and enthusiastic support for PC use that has a tangible effect throughout the organization.

Successful executive training, however, is easier said than done. Three factors in particular make it difficult to achieve.

One is the severe limitations on top managers' time. Schedule a training session for next Wednesday at 2:00 p.m., and 47 priorities are certain to intervene. To succeed within this time constraint means that trainers must be exceedingly flexible.

It may be easier for an executive to fit in a session before or after hours or on weekends. Training may have to be segmented to fit the time available rather than the time needed. Except for those few top managers who can be enticed into multiday "get away and play" PC training, not many executives can allocate more than a small block of time to any one session. The executive trained in-house is never far from the next interruption. In this respect, firms that offer training at their own facilities may meet with greater success.

A second factor operating against successful training is management resistance. Knowing spreadsheet macros is not likely to enhance the resume of any executive. Accessing and analyzing business information is what is important; the PC is only a tool. Training should revolve around relevant business issues. The trainer, therefore, must identify the information component of pertinent business issues and appeal to the executive on the basis of how PCs can be of value in addressing these issues.

A third factor is the age-old problem of executives who cannot type; yet this need not be a problem. Firms that train executives have found it possible to structure problems so that these top managers can use software and run applications with a minimum of keystrokes. Even though many executives are little more than one-finger typists, they often emerge from such classes feeling excited about becoming hands-on users.

What should executive training focus on? Emphasis on features and functions may be appropriate if the training objective is to teach executives to use applications developed for them, such as an executive information system.

On the other hand, if the training objective is to open management's eyes to the power and potential of the computer, product mechanics can be held to a minimum. In this case, trainers can emphasize the following:

- The important capabilities of typical products and how various areas of the company are already using them or might use them to address business needs.
- The ways in which costly errors, problems or abuse can occur in the absence of appropriate standards and controls.
- How PCs can enhance — or hinder — productivity.
- The ease of using a PC relative to alternative methods and the importance of adequate practice to acquire expertise.

For organizations to succeed in using information as a competitive asset,[1] top management must have at least a conceptual understanding of the tools that are the means to that end. PC trainers therefore bear a critical responsibility to help executives achieve this understanding.

ACCESSING AND analyzing business information is what is important; the PC is only a tool. Training should revolve around relevant business issues.

Karten is president of Karten Associates in Randolph, Mass., and editor of the monthly newsletter "Managing End-User Computing."

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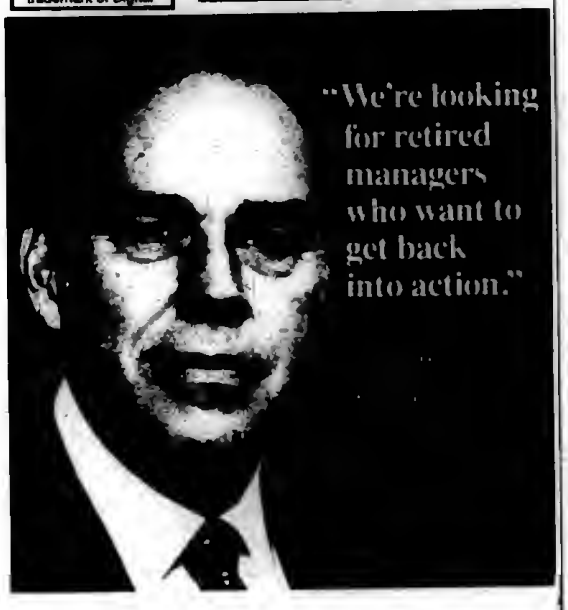

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Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JUNE 7, 1989

E X C H		52-WEEK RANGE	PRICE CLOSE JUNE 7, 1989	WEEK NET CHNGE	WEEK PCT CHNGE

Communications and Network Services

N	AMERICAN INFO TECHS CORP	62	44	61	1.5	2.5
O	ANDREW CORP	22	15	23	1.9	8.9
O	ARTEL COMM CORP	7	6	5.875	-0.1	-2.1
N	AT&T	36	29	36	0.4	1.1
O	AVANTEK INC	7	3	6	0.1	2.6
O	BYTEX CORP	16	12	13.875	-0.1	-0.8
N	BELL ATLANTIC CORP	63	48	61.625	4.8	8.6
N	BELLSOUTH CORP	92	26	91	2.8	5.2
O	COMPRESSION LABS INC	9	6	8.25	1.3	17.9
O	COMPUTER NETWORK TECH	2	1	1.844	0.0	0.0
O	CONTEL CORP	25	33	80.625	2.6	6.8
O	DATA SWITCH CORP	8	6	4.125	-0.4	-8.3
O	DIGITAL COMM ASSOC	26	17	23.5	1.9	8.7
O	DYNATECH CORP	28	17	17.5	-0.3	-1.4
O	FIBRONICS INTERNATIONAL INC	7	0	7.25	1.0	16.0
O	GANDALF TECHNOLOGIES	6	4	5.5	0.0	0.0
O	GENERAL DATACOMM INDS	5	0	5.0	0.0	4.8
N	GTE CORP	38	37	38.25	2.1	4.0
O	INFOTRON SYS CORP	12	10	10	0.0	0.0
N	ITT CORP	61	48	60.125	0.3	0.4
N	M/A COM INC	11	8	8.25	0.1	1.9
O	MCI COMMUNICATIONS CORP	42	14	41.75	2.8	7.1
O	NETWORK EQUIPMENT TECH INC	25	14	24	-0.3	-3.0
O	NETWORK SYS CORP	12	6	9.125	0.0	0.0
O	NORTHERN TELECOM LTD	20	14	19.25	1.9	10.8
O	NOVELL INC	35	24	31.25	-4.3	-12.0
N	NYNEX CORP	63	20	62.625	4.1	6.3
N	PACIFIC TELESIS GROUP	43	36	43	1.8	4.3
A	PCNEL CORP	6	3	5.625	0.8	15.4
N	PLESSEY PLC	46	25	43	0.0	1.3
N	SCIENTIFIC ATLANTA INC	19	10	18.875	1.1	6.3
N	SOUTHWESTERN BELL CORP	54	28	53.875	2.3	4.4
O	3 COM CORP	25	16	20.5	-7.0	-25.5
N	U S WEST INC	71	53	71	3.0	4.4

Computer Systems

O	ALLIANT COMPUTER SYS	7	6	6.375	-0.6	-9.3
O	ALPHA MICROSYSTEMS	6	6	6.0	-0.5	-7.1
O	ALTOS COMPUTER SYS	10	6	6.875	0.1	1.9
A	AMDAHL CORP	28	15	23.125	0.3	1.1
Q	APPLE COMPUTER INC	50	34	46.25	0.5	1.0
N	BOLT BERANEK & NEWMAN	18	7	8.375	-0.1	-1.9
N	COMPAQ COMPUTER CORP	102	50	98.625	2.3	2.4
N	COMMODORE INTERNATIONAL	20	6	16.125	0.0	0.0
O	COMPUTER AUTOMATION INC	6	6	5.5	-0.5	-8.7
N	CONTROL DATA CORP	26	18	20.125	-0.8	-3.6
O	CONVEX COMPUTER CORP	15	7	13.875	-0.4	-2.6
N	CRAY RESH INC	35	46	52.25	-0.1	-0.8
O	DAISY SYS CORP	12	6	3.75	0.0	0.0
O	DATA GEN CORP	29	16	18.25	-0.5	-2.7
N	DATAPOINT CORP	6	3	4	0.4	10.8
O	DELL COMPUTER CORP	10	7	8.25	-0.3	-2.9
N	DIGITAL EQUIP CORP	122	85	89.875	2.0	2.2
O	FLOATING POINT SYS INC	4	2	2.625	-0.1	-4.5
N	HARRIS CORP	33	25	32.375	0.6	1.9
N	HEWLETT PACKARD CO	62	44	54.375	0.4	0.7
N	HONEYWELL INC	80	57	70.25	0.8	1.2
N	IBM	131	108	109.5	-0.1	-0.1
O	INFORMATION INTL INC	19	13	15.5	-0.5	-1.9
O	IPL SYS INC	9	3	8.25	1.9	29.4
N	MAI BASIC FOUR INC	21	7	6.875	0.1	1.9
N	MATSUSHITA ELEC IND LTD	218	160	170.5	-5.0	-2.8
O	MENTOR GRAPHICS CORP	40	23	38.75	-4.8	-10.9
N	NBI INC	9	1	8	0.0	0.0
N	NCR CORP	70	61	67.5	0.9	1.3
O	PRIME COMPUTER INC	21	12	18.5	0.1	0.8
O	PYRAMID TECHNOLOGY	25	16	10.375	-3.0	-22.4
O	SHAREBANK CORP	4	2	2.375	-0.1	-5.0
O	SILICON GRAPHICS CORP	25	14	19.125	-0.4	-1.9
O	STRATUS COMPUTER	35	21	32	-1.0	-3.0
O	SUN MICROSYSTEMS INC	25	13	19.5	-2.9	-11.4
O	SYMBOLICS INC	3	1	1.875	-0.1	-5.3
O	SEQUENT COMPUTER SYS INC	28	16	25.5	-1.4	-5.1
N	TANDEM COMPUTERS INC	21	16	18.6	0.3	1.4
N	TANDY CORP	48	35	45.5	1.6	3.7
N	ULTIMATE CORP	14	8	11.75	1.1	10.6
N	UNISYS CORP	35	25	27.9	0.6	2.3
A	WANG LABS INC	12	7	8.125	0.0	0.0

Software & DP Services

O	ADVANCED COMP TECH	4	1	1.375	-0.3	-15.4
O	AMERICAN MGMT SYS INC	18	16	14.125	-1.0	-6.3
O	AMERICAN SOFTWARE INC	18	6	17.25	1.5	8.6
O	ANACOMP INC	12	6	8.75	0.1	1.4
O	ANALYSTS INTL CORP	20	8	18.75	0.6	3.9
O	ASHTON TATE	28	19	22.75	0.8	3.4
O	ASK COMPUTER SYS INC	15	12	14.625	-1.0	-6.4
O	AUTODESK INC	49	29	37.625	0.1	0.3
O	AUTO DATA PROCESSING	42	35	40	1.0	2.6
O	BMC SOFTWARE INC	61	9	19.25	-1.3	-6.1
O	BOOLE & BABBAGE INC	30	9	10.75	-1.0	-8.1
N	BUSINESSLAND INC	16	10	12.5	-0.5	-3.9
O	COMPUTER ASSOC INTL INC	44	28	41.5	0.6	1.5
O	COMPUTER HORIZONS CORP	10	7	7.625	0.3	3.4
O	COMPUTER SCIENCES CORP	38	41	50.75	1.9	2.8
O	CORPORATE SOFTWARE	15	9	14.25	0.5	2.6
O	COMPUTER TASK GROUP INC	17	11	13.75	-1.5	-9.3
O	COSMOS INC	6	6	9.125	-0.1	-2.0
O	COMSHARE INC	25	17	24.5	0.5	1.9
O	CULLINET SOFTWARE INC	8	4	7.875	1.3	19.8
N	GENERAL MTRS (CL E)	54	37	52.875	0.3	0.5
O	LOGAN SYS INC	7	3	6.625	0.6	9.2
O	INFORMIX CORP	25	7	10.125	-0.1	-1.2
O	INTELLICORP INC	5	3	4.25	-0.3	-6.3
O	KEANE INC	18	8	13.25	-0.3	-1.9
O	LEGENT CORP	28	16	26.5	-0.3	-1.9
O	LOTUS DEV CORP	27	15	25.625	-0.4	-1.4
O	MANAGEMENT SCI AMER	14	6	11	0.4	2.5
O	MICRO FOCUS INTL CORP	4	2	2.75	0.0	0.0
O	MICROSOFT CORP	77	46	59.75	-0.5	-1.2
O	NATIONAL DATA CORP	34	19	32.625	-1.3	-3.7
O	ON LINE SOFTWARE INTL INC	8	4	6.875	0.3	2.6
O	ORACLE SYS CORP	52	19	31.125	0.6	2.0
O	PANSOPHIC SYS INC	15	12	14.25	-0.3	-1.7
O	PHOENIX TECHNOLOGIES INC	19	10	13	-0.6	-4.3
O	POLICY MGMT SYS CORP	31	21	30.375	0.6	2.1
O	PROGRAMMING & SYS INC	19	11	18.375	-0.1	-0.7
O	RABBIT SOFTWARE INC	3	1	1.125	0.0	0.0
O	RELATIONAL TECHNOLOGY INC	61	9	11.125	1.5	17.1
N	REYNOLDS & REYNOLDS CO	34	17	32.625	-0.8	-2.9
O	SEI CORP	22	10	19.75	0.1	0.8
O	SHARED MED SYS CORP	22	14	17.375	-0.4	-2.1
O	SAGE SOFTWARE INC	10	9	9.25	-0.1	-1.3
O	SOFTWARE PUBG CORP	28	16	24	-4.0	-14.3
A	STERLING SOFTWARE INC	6	6	6.75	0.1	1.9
O	SUNGARD DATA SYS INC	20	13	15.25	0.0	0.0
O	SYSTEMATICS INC	37	25	34.75	0.0	0.0
N	SYSTEM CENTER INC	24	12	23.75	1.5	6.8
N	SYS. SOFT INC	27	11	20.25	1.0	4.0

Semiconductors

N	ADV MICRO DEVICES INC	17	7	10.25	-0.1	-1.2
N	ANALOG DEVICES INC	16	10	11.375	0.9	4.8
O	ANALOGIC CORP	11	6	10.375	-0.8	-6.7
O	CHIPS & TECHNOLOGIES INC	25	11	24.9	-0.5	-2.0
O	INTEL CORP	37	16	32.25	-0.5	-0.8
O	LSI LOGIC CORP	14	8	11.25	0.3	2.7
O	MICRON TECHNOLOGY INC	25	15	23.375	-1.1	-4.6
N	MOTOROLA INC	80	26	58.625	0.9	0.4
N	NATL SEMICONDUCTOR	16	7	7.25	-0.5	-6.5
N	TEXAS INSTRS INC	61	35	42	-1.5	-3.4
A	WESTERN DIGITAL CORP	16	11	11.125	-0.5	-2.2

Peripherals

O	ALLOY COMP	4	2	1.75	-0.1	-3.4
N	AM INTL INC	9	4	8.5	-0.4	-6.4
O	AST RESH INC	17	7	8.75	0.5	7.7
O	AUTO TROL TECH CORP	9	4	8.25	0.1	2.4
O	BANCTEC INC	15	6	14	0.9	4.7
O	CIPHER DATA PRODS INC	11	6	6.75	0.6	2.6
O	COGNITRONICS CORP	5	2	4.375	0.6	16.7
O	CONNOR PERIPHERALS	14	7	13.375	0.3	1.9
O	DATAPRODUCTS CORP	16	9	12.875	-1.0	-7.2
A	DATARAM CORP	10	7	9.25	-0.3	-2.9
N	EASTMAN KODAK CO	91	42	90.5	5.8	12.8
O	E M C CORP MASS	10	3	8.8	1.4	33.3
O	EMULEX CORP	12	9	9.125	-1.2	-12.0
O	EVANS & SUTHERLAND	22	19	20	-0.3	-1.2
O	ICOT CORP	4	2	2.25	0.0	0.0
O	INTERLEAF INC	17	9	8.625	0.4	4.5
O	IOMEGA CORP	9	2	2.688	0.1	2.4
O	LEE DATA CORP	4	2	3.625	0.6	16.0
O	MAGSTOR SYS CORP	4	2	2.063	0.1	3.3
O	MAXTOR CORP	14	9	10.375	-0.1	-1.2
O	MICROPOLIS CORP	25	9	9.5	0.8	4.8
O	MINISCRIBE CORP	14	1	2.125	0.1	6.1
N	MINNESOTA MNG & MFG CO	75	35	74.125	1.4	1.9
O	PERSONAL COMPUTER PRODUCTS INC	9	4	4.25	-0.8	-4.2
O	PRIAM CORP	.2	1	0.688	0.0	0.0
O	PRINTRONIX INC	11	7	8.8	0.9	3.0
O	QMS INC	10	9	9	0.4	4.9
O	QUANTUM CORP	19	9	19	2.6	16.9
N	RECOGNITION EQUIP INC	12	6	7.375	-0.3	-3.3
O	REXON INC	9	4	7.25	0.0	0.0
O	SEAGATE TECHNOLOGY	19	7	14	-0.3	-1.9
O	STORAGE TECH CORP	35	17	15.875	-0.3	-1.9
O	TANDON CORP	.3	1	0.688	0.1	10.1
N	TEKTRONIX INC	27	19	24.125	0.6	2.7
O	TELEVIDEO SYS INC	1	0	0.875	0.0	0.0
N	XEROX CORP	69	52	63.375	-0.4	-0.6

Leasing Companies

O	AMPLICON INC	119	11	13.625	0.4	2.6
N	CAPITAL ASSOCIATES INTERNATIONAL INC	9	6	7.625	0.4	5.2
N	COMDISCO INC	28	16	27.125	-0.1	-0.5
O	CONTINENTAL INFO SYS	7	0	0.5	-0.1	-11.2
O	LDI CORPORATION	17	11	16.5	0.8	5.1
O	PHOENIX AMERN INC	9	3	3.25	-0.1	-3.7
O	SELECTERM INC	9	8	8.625	-0.5	-5.5

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Get it over with

Slow to release revenue data, 3Com is hit with a sharp jolt

When you have bad news, it is best to get it out quickly, letting the chips — and your shares — fall where they may. Local-area network maker 3Com Corp. learned this the hard way. It released a poor earnings report after the close of trading Friday, June 2, and investors remembered over the weekend. 3Com dropped a whopping 7⅞ points last Monday, and it closed Thursday at 19¾.

Pyramid Technology Corp., hinting at a probable loss for its latest quarter, suffered a 3-point fall to close Thursday at 10½. In spite of releasing a good earnings report, 3Com's rival, Novell, Inc., ended the week at 31¾, off 3½ points. IBM was off slightly, closing Thursday at 109¼, down ⅛ of a point.

Quantum Corp. continued its recent climb. It benefited from a good buy recommendation from an investment firm by closing the week at 19, up 3½ points. Digital Equipment Corp. inched up ½ of a point to close Thursday at 93¾. Apple Computer, Inc. rallied from a 2½-point midweek deficit to finish Thursday at 47⅜, still off 1⅛ points. Texas Instruments, Inc. dropped 2¼ points, to close at 43⅜.

JOSEPH J. FATTON

Media Lab

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organization. Given the competitive nature of academia, the raft of attention the Lab draws has raised more than a few eyebrows on MIT's campus. What is the depth, some ask, beneath the glitz?

This, after all, is the sexy side of technology, the side that is fueling the inevitable collision of entertainment, publishing and computers and the side that sparks a vision of tomorrow in the public's eye.

This is the place where a visitor can watch a demonstration of a computerized piano-playing accompanist or read an electronic newspaper that knows the reader and continually updates the information as it suits that reader's interests.

The work has attracted notable interest, from IBM's Ralph Gomory to rock star Peter Gabriel. The media crush got so bad that even *60 Minutes* was turned away. It is here, the media perceives, that the future is being invented, and everyone wants a piece of the action.

The glamour surrounding the Media Lab often obscures its stated purpose, which is to be a center of basic research and learning. Under the watchful eye of Media Lab Director Nicholas Negroponte, the distractions are channeled away so that the 160 faculty, students and researchers can pursue the ground-breaking and often bizarre ideas that they attempt to turn into reality.

Looking to 2000

The common ground of the myriad projects is that they offer a glimpse into the future of computer technology. "For this particular aspect of information technology, the Media Lab is a good window into the end of this century and on into the next," says Bill Ahearn, an IBM program manager and liaison between the Lab and the company.

Companies such as IBM, Xerox Corp., Nippon Telegraph & Telephone Corp., NEC Corp. and Asahi newspapers have been willing to shell out up to $1 million over a three- to five-year period to gain access to the Media Lab. Full endowments now cost $2 million and up. More than 80 other sponsoring companies have access to the Lab in one form or another.

The Media Lab is open and visible, and the information about its work is available through a variety of outlets. But many of the sponsoring companies get firsthand contact with the work being done and build bridges from the Lab back to their own firms.

What they are exposed to is unlikely to be found in any corporate R&D lab. The work is broken down into 12 disciplines that spin around and overlap each other. Some have mundane titles like Graphics or Speech Research; others come under such attention-getting labels as Movies of the Future, School of the Future or Advanced Television Research. Such visionaries as Seymour Papert, Marvin Minsky and Alan Kay have come aboard in teaching and advisory roles. Business leaders including NEC's Koji Kobayashi and Apple Computer, Inc.'s John Sculley are vocal supporters.

The Lab's beginnings

The Media Lab grew out of a vision held by both Negroponte and former MIT President Jerome Weisner. They brought together research groups within MIT and initiated several new groups under the banner of the Lab. Negroponte, a suave design architect and a consummate fundraiser, went out and raised $52 million for the building and equipment.

Since the doors opened to the new building (named for Weisner), the Lab has been a focal point of attention at MIT. Its students are recruited by Lucasfilm Ltd., Next Computer, Inc. and other leading-edge media and technology companies. MIT itself finally recognized the value of the Lab by giving it degree-granting status in July 1987.

But if the Media Lab is a lightning rod for attention, it is not without controversy. Even in the frenetic environs of MIT, the Lab stands out as a bold experiment in industrial and academic relations. While most of the university's funding comes from the U.S. government (specifically the Department of Defense), the Media Lab is just the reverse: More than 80% of the Lab's total funding comes from private industry.

Negroponte hawks sponsorships here and abroad like a Broadway producer seeking investors for a new play. His presence alone is a source of controversy. Some view him as a visionary; others think he is a clever huckster.

Critics contend that while the Lab is sexy and full of sparkle, it has not yet produced anything more than airless demonstrations of ideas, without key building blocks along the way.

Negroponte is unperturbed by such criticism. He says he believes totally in the Lab's research and devotes his energy to selling his creation. The Lab offers structured sponsorships that come

Technicians at work

The following is a sampling of projects currently under way at MIT's Media Lab:

- Advanced television research focusing on high-definition television (HDTV). The Lab has already achieved density levels two to three times greater than any commercial HDTV products now in development.
- Real-time, synthetic three-dimensional holography. This breakthrough work is leading to full-motion holography.
- School of the Future. A program that employs powerful computers in grade schools to enhance early education.
- A "living" newspaper. *Newspeek* combines computer databases with videotex-like capabilities to allow the reader to create a personalized newspaper.
- "Paperback" movies. Technology that puts movies on compact audio disks.
- The Rangecamera. This capability provides two full-motion images of the same scene from different perspectives.
- Conversational Desktop. A voice-controlled computer system that acts like an automatic receptionist, personal secretary and travel agent.

in various forms, from building and equipment grants, which get you a certain limited level of access, to endowments of academic chairs and full affiliate sponsorships, which provide a home for full-time researchers from the sponsoring company.

The Media Lab therefore must walk a fine line in its role as a basic research lab without being viewed as too closely tied to industry, particularly Japanese industry (see story below).

The industrial presence is heavily weighted by the Japanese; 12 of the 15 companies with full-time researchers at the Lab are from Japan. Of the U.S. companies, only IBM, Xerox and Digital Equipment Corp. sponsor full-time researchers at the Lab. The presence of these industry representatives has proved to be more of a headache to the Lab than originally foreseen, and Negroponte is not encouraging sponsors to send them. Some industrial sponsors, although not full affiliates, have been discouraged on their own.

Bill Dunn, executive vice-president of Dow Jones & Co. and an early sponsor of the Lab, says he has lost his initial enthusiasm for the place. "There are great things to view there; it's like Disneyland for technology. But what has come out of there and hit the commercial market?" Dunn asks. "Some of the projects are now 5 years old, and you have to wonder what it's all for."

Media Lab staff are unaffected by such points of view. Such thinking misses the point of the Lab, they say. Negroponte points out that Dunn and several other early sponsors simply do not visit the Lab often enough to know what is actually happening. "It really depends on when you peek in the window," he says.

Out of the ivory tower

For their part, the professors and researchers are aware that their ideas must be communicated, and it is counterproductive to sit high in an ivory tower. But the Lab, Negroponte says, was never intended to produce commercial products.

"You don't ever see things we do trickle out in their entirety as a rule," says Andrew Lippman, associate director of the Lab. "We never do anything as complete as a product that someone could endorse and manufacture. The students are here to get an education, so the last 10% of the work that can take 90% of the time [in product development] is not necessarily the most valuable educational component."

According to Alan Kay, an Apple fellow and creative force behind many key ideas in personal computing, every technology that companies "are making billions of dollars on today" came not from directed research but from exploratory research such as that being done at the Lab.

Negroponte is undaunted by the controversy. He is proud of the Lab, pointing to what he calls "Nobel Prize-level" work in holography and dramatic research in HDTV. He says he believes that one of the most valuable assets of the Lab is also one that was unexpected. It has become a safe haven for its corporate sponsors to intermingle and share ideas without fear of losing proprietary company secrets.

"There's a thirst that people have," Negroponte says. "At IBM, IBMers talk to IBMers. It's very incestuous. For many of our researchers and visitors, this place is an opportunity to talk to others, whether it's graduate students, faculty or other visitors in ways they don't normally get to. We find ourselves acting like marriage brokers."

However, there is sentiment stirring, even in Japan, that the Lab should have produced more workable ideas by now. One source inside the Lab says that several Japanese companies are considering not renewing their sponsorship. Negroponte discounts such rumors, saying every Japanese company that provided an original endowment has signed a new contract to continue to contribute. He says he is adding one or two new Japanese sponsors per year but is spending more time concentrating on European donors.

Nonetheless, the philosophy within the Lab is "demo or die," as researchers are pressed to create a working demonstration of their project that can exist for 20 minutes, be graded and videotaped and then dismantled. "Amid very valuable work, I think the single biggest weakness of the Lab is that it is so intent on demos, the tools are weak," says Michael Schrage, a writer and visiting scholar at the Lab. "All that's left after some of these demos is balsa wood."

Tim Browne, communications director of the Lab, counters by saying that basic research does not move at lightning speed. He claims that people tend to expect too much from the Lab because of the vast exposure it has gotten. "We have never believed our own press," he says. "Everyone expects the thrill of the future, but coding motion sequences is anything but thrilling."

Most of the sponsors are not complaining. They appreciate the powerful concepts being developed. IBM's Ahearn says the payoff has been "considerable" when one looks at the total picture of the dialogue and interchange of ideas with MIT researchers. "You have to build these bridges" back to your internal research labs, Ahearn insists.

Jilliane Bennett, a research consultant at DEC and liaison to the Lab, agrees and points out that DEC just recently signed on as a full affiliate because of the clamoring of several internal DEC groups to retain and increase its relationship with the Lab. DEC gave a $1.6 million equipment grant to the Lab in January in exchange for full affiliation.

"The No. 1 reason to be part of it is to get their perspective," Bennett says. "They have some of the top researchers in a variety of areas there. They are 10 years ahead of industry."

"THERE'S A thirst that people have. For many of our researchers and visitors, this place is an opportunity to talk to others."

NICHOLAS NEGROPONTE
MEDIA LAB

Walter Bender, *director of Electronic Publishing Group in front of the largest highest resolution monitor*

Japanese influence

To the Japanese, the Media Lab represents an oasis of ideas and creative thinking that is foreign to their own research technology community. And they have flocked to it. But the extensive Japanese presence at the Lab has not gone without notice.

A large percentage of the Media Lab's endowment comes from Japanese companies, and it is MIT's single largest recipient of Japanese endowment funds. Critics wonder if the Media Lab is yet one more example of the U.S. transferring technology to Japan and getting nothing in return.

According to Media Lab Director Nicholas Negroponte, however, the amount of Japanese funding for the Lab is misunderstood. Sponsored research by the Japanese amounts to only $400,000 per year, he says. He admits, however, that the Japanese provided the majority of funds to build and endow the Lab. According to Negroponte, the Japanese have provided $12 million in endowment funds, but the Lab can spend only 5% of that each year.

"It's a clearly an issue we agonise over," Negroponte claims. "It's not something we dismiss in cavalier fashion."

Most observers assume that the Japanese are coming to the Lab to take back technology. "That's not what the companies want," Negroponte says. "They want the person to come here and become a golden goose who can go back to Japan and lay golden eggs there."

Indeed, after being exposed to the Lab for more than five years now, the Japanese are at work building their own version of the Media Lab at Nihon University in Tokyo. Negroponte is serving as advisor to the Japanese project.

Negroponte insists there is no technology transfer going on between the two institutions. He says the Lab concentrates on areas of technology that the U.S. "has already capitulated. We don't have a television industry. We don't make VCRs. There's not a single facsimile machine made in this country. The areas we work in just don't provoke that kind of response."

Nonetheless, the Media Lab has proved to be far more of an attraction to the Japanese than to Americans. Currently, of the 15 companies with full-time researchers at the Lab, 12 are from Japan. "We're providing [the Japanese] with a style of thought they don't have in their country," Negroponte says.

Despite his defense of the Japanese presence at the Lab, however, Negroponte wants to cut down the number of full-time on-site people because they tend to be researchers on sabbatical who win the right to attend as a prize. "They hurt the ecology of the place," Negroponte says. "They sit next door to a graduate student who is putting in 80 to 100 hours per week, and they tend to do less for the Lab," Negroponte says.

GLENN RIFKIN

Bull spruces up DPS/7000 line

BY ROSEMARY HAMILTON
CW STAFF

BILLERICA, Mass. — Bull H. N. Information Systems last week swept its DPS/7000 models out the door and replaced them with eight new DPS/7000 systems that it claims offer a 50% improvement in price and performance.

Users contacted did not appear too anxious for new systems but said it is nevertheless a good sign that Bull is working to improve the midrange line.

"It's why we chose the 7000 line in the first place," said Thomas Benigno, vice-president of Lawrence Textile Shrinking Co., Inc. in Lawrence, Mass. "We can upgrade in the future. Other product lines seemed like they would tie us down."

Benigno, who purchased his first DPS/7000 a year ago, said he does not plan to upgrade again for several years. "There's no reason to upgrade just because new models are out, but the DPS/7000 is where we'll be going," he said.

Bull will support the older DPS/7000s — including Models 10E, 20E, 30E, 40E, 50E, 72, 82 and 92 — for the next five years, according to Maurice Gervais, director of marketing for medium-range systems.

Charging ahead

The revamped line will take Bull into the smaller business-system market and put it head-to-head with IBM's Application System/400 line. The higher end models will compete with IBM's 4381 series.

Despite the IBM targets, the majority of older DPS/7000s were purchased by Bull customers, many of whom upgraded from the DPS/7 series. Bull expects a big chunk of new-model sales to come from upgrades as well.

The Catholic Knights Insurance Society in Milwaukee is expecting a new DPS/7000 Model 340 later this month. The company had been running a DPS/7 system and been planning a move to the DPS/7000s when the new systems were announced. Vice-President Susan Eilmaurer said the company did not do an extensive search for a new system because it could move applications to the DPS/7000 with minor tweaking.

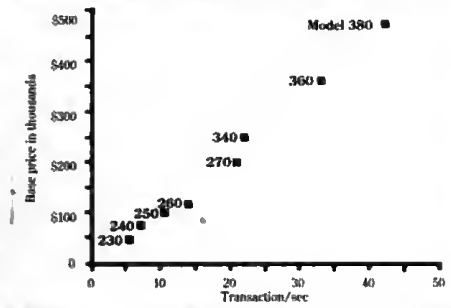
"We expect to run the two systems together for less than a month," she said of the expected migration. "People here were happy with the status quo. This isn't a conversion. The software moves right over."

The replacement models came two years after the DPS/7000s were introduced. Gervais called it "an accelerated pace" but one that is now dictated by the rapid changes in the midrange market.

The new models use smaller CMOS chips, which allow Bull to pack more power into a smaller box. The systems reportedly also use faster logic switching and higher speed I/O channels, which help boost the transaction/sec. rates. For instance, the new Model 230, which can support up to 60 concurrent users, can handle up to 5.5 transaction/sec.; the older, comparable Model 10E did 3.5 transaction/sec.

Replace-a-Bull

Bull H. N.'s revamped DPS 7000 line includes a full range of replacements featuring improved price and performance points



SOURCE: BULL H. N. INFORMATION SYSTEMS, INC. CW CHART: TOM MONAHAN

DEC makes DBMS bid with bundled Ultrix

BY AMY CORTESE
CW STAFF

In its drive to become a major database software provider, Digital Equipment Corp. said last week it will package a runtime database management system with a future version of its Ultrix operating system.

The announcement follows a similar bundling of a runtime version of DEC's RDB with VMS, in effect giving away a free DBMS engine with each copy of VMS and Ultrix.

DEC will base the Ultrix DBMS on Relational Technology, Inc.'s Ingres DBMS, under terms of a deal whereby DEC purchased the Ingres technology. However, the unnamed DBMS will be tweaked by DEC engineers to "make it a uniquely Digital product," according to a company spokesman.

The runtime DBMS will fill a gap in DEC's Ultrix offering and may encourage third-party developers to write applications based on it — an important consideration in DBMS purchases. Ultrix customers will be able to run applications written for it without having to purchase the DBMS license.

No date was given for availability, and DEC indicated that additional software products could result from the Ultrix DBMS program. According to Joe Manard, OSF/Ultrix marketing manager, the Ultrix DBMS will "plug and play" with RDB, and applications will be portable across other Unix environments.

DEC has long relied on third parties to provide DBMSs and tools for its Ultrix and VMS systems. But following in the footsteps of rival IBM — which has successfuly captured the DBMS market in its primary operating environments — it is pushing to become a dominant DBMS supplier. While some independent DBMS vendors are in an uproar over DEC's bundling practices, judging by comments from users contacted by *Computerworld*, they need not worry.

Sheldon Frick, a database administrator at Allied-Bendix Aerospace in Teterboro, N.J., said that although his firm uses VMS, "we get a lot of things bundled with it that we don't use." He said his shop uses data management products from Oracle Corp. and Henco Software, Inc. but has no plans to use RDB.

Similarly, Greg Knaus, a systems manager at Bendix Field Engineering Corp., said that at his shop, most of the staff is experienced on other DBMSs, and using DEC's DBMS would require retraining.

While RDB has been around for many years, it has had limited success compared with third-party offerings, and the impact of DEC's bundling has yet to yield results. But the Ultrix DBMS market is essentially untapped, and bundling the Ingres DBMS may give DEC a lead, analysts said.

Nassim Hanifi, systems manager at Agritech Systems, Inc. in Portland, Maine, said he found a runtime version of Ingres with Ultrix appealing. "At $8,000 to $60,000 for the engine, that's a good cost savings," he said. Agritech uses Ingres on VMS and plans to purchase an Ultrix system this summer. Hanifi said that if he were making a hardware decision "between DEC, Hewlett-Packard and Sun Microsystems, the availability of a DBMS would make a big difference."

The packaging of RDB with VMS has caused enough concern that independent DBMS vendors have banded together under the auspices of the software vendor organization Adapso to protest DEC's bundling practices as unfair and anticompetitive. According to Marty Goetz, chairman of Adapso's vendor relations committee, the group has written a formal letter to DEC Chairman Ken Olsen and plans to seek support from various federal agencies. A DEC spokeswoman said Olsen had not yet received that letter.

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> AGRITECH SYSTEMS

Analysts see the bundling of database sevices with the operating system as a natural evolution. "It is inevitable that more and more services shared by applications will be centrally defined and managed," contended Gig Graham, program director of software engineering services at Gartner Group, Inc.

Some DBMS vendors have responded to the trend and shifted their focus to development tools. David Saccalay, president of Unify Corp., said he was not surprised by DEC's move. "DBMS has become part of the standard platform," he said, adding that Unify would support DEC's DBMS.

Tandem Nonstop release tilts at DB2

BY J. A. SAVAGE
CW STAFF

CUPERTINO, Calif. — Claiming the high ground in parallel processing ahead of IBM's DB2 relational database, Tandem Computers, Inc. last week announced Release 2 of its Nonstop SQL.

Users cited as its most important feature the product's ability to break down most query and batch requests to run over as many processors as are available in the hardware configuration.

The release, slated for delivery by the end of the year, automatically runs batch, query and on-line transaction processing simultaneously, which needed to be performed manually with Release 1. Tandem also claims its transaction/sec. rate, benchmarked at 208 in 1986, is not affected.

Teradata Corp. in Los Angeles offers a similar system, which it says processes queries in parallel through dedicated servers.

"With Release 2, the parallel processing will provide us increased performance, and on-line reorganization will reduce maintenance for us because of 24-hour availability," said Margie Mullen, data processing manager at the California Department of Motor Vehicles. The department recently benchmarked Version 1 against DB2 and chose Tandem's product.

Rob Welsh, manager of the database group for Target Stores in Minneapolis, has both DB2 and Tandem's Release 1 Nonstop SQL. He echoed Mullen's sentiments, saying the fact that there would be "lots of benefits from parallelism and on-line reorganizations is a big benefit for those who are running 24 hours a day."

"DB2 has no way to apply multiple processors to one statement," said Tom Sawyer, a consultant with Codd and Date Consulting Group. Although a uniprocessor IBM mainframe can provide 20 million to 22 million instructions per second (MIPS), "once it's saturated, it can't go much faster," Sawyer claimed. Even if the IBM mainframe has multiple processors, DB2 cannot take full advantage of those additional CPUs.

With eight Tandem CPUs, the MIPS rate exceeds that available from IBM, Sawyer said. Tandem systems can grow to 224 processors, according to the company. But, Sawyer said, DB2 has the advantage of more complementary product offerings from third-party developers.

Sawyer expects IBM's next release of DB2 to have the ability to break statements down into parallel processing. Target's Welsh said that IBM has hinted that may be so, "but they're not saying 'parallel' loud." IBM refused to comment.

Tandem also announced related agreements with database management system market players including Oracle Corp., Sybase, Inc. and Online Solutions, Inc.

CASE vendors fidget at repository delay

BY STANLEY GIBSON
CW STAFF

Although many computer-aided software engineering (CASE) vendors had been expecting a summer announcement of IBM's repository, they are now settling in — albeit uncomfortably — to wait until the fall.

IBM has stated for the record only that the repository, its sophisticated data dictionary for use with CASE tools, will be announced this year. Last week, a spokesman reiterated that statement, declining to comment on specific dates.

However, some in the CASE community had been led to believe that IBM once intended a June announcement. Vaughn Merlyn, chairman of Case Research Corp. in Bellevue, Wash., said the repository announcement had been scheduled for June 6. He said he has received indications from IBM that it is now scheduled for September or October. Merlyn and others said they expect the repository to be announced in increments, with full functionality coming over a period of two to three years.

A number of CASE vendors have linked their long-term corporate strategies to the repository, the lack of which is perceived to be holding back the CASE market. "Today, you buy a vendor's promises. After the repository, you can know for sure," said Steve Sangaro, manager of end-user computing at Telenet Communications Corp. in Reston, Va., during a recent CASE conference.

Buyer hesitancy is making some CASE vendors anxious. "The repository is not helping the CASE market. I would like for [IBM] to announce it and get to where vendors and customers could look at it and understand it," said Eldon Patterson, director of development and research at Texas Instruments, Inc.'s Information Engineering Facility.

Patterson said he suspects management changes at IBM's Santa Teresa Laboratories, where development is taking place, are partly responsible for repository delays. Morris Teradalsky, the lab's onetime director, and Leonard Liu, his replacement, both left the lab within the past six months.

Mike Lyons, president of CASE tools vendor Asyst Technologies, Inc. in Naperville, Ill., said he has "waited for the announcement for a year and a half" and believes it is set for October. Nevertheless, he predicted the version announced then will support only data modeling, not full life cycle CASE. "The first release will be very limited. Santa Teresa continues and continues to slip," Lyons said.

One reason for repository delays could be its data model component, the part of a repository with which the various CASE tools interface. Agreement among vendors and IBM on a data model would mean tools from the different vendors could be used interchangeably. Without a common data model, users may be forced to use a set of tools from a single vendor.

Several vendors that declined to be named in this connection said IBM and several CASE vendors have had disagreements about the data model.

However, the difficulty of arriving at an agreement on a data model is not to be underestimated, some vendors said. "You're dealing with a Tower of Babel with CASE tools," said Al Case, vice-president of professional services at Nastec Corp. in Southfield, Mich. "Our dictionary and that of TI, Knowledgeware and Index are not close, so compatibility has to be inherent in the repository," he said.

"The sooner IBM will announce and deliver a repository-like product, the happier I am as a CASE vendor. It's no secret they're [IBM] not going to announce something this month," he added.

To say there is discontent among the CASE community would be an understatement, Lyons said. Some vendors said they resent the access they have to IBM information because not all are given the same degree of disclosure, he said.

CSP wins supporters

BY STANLEY GIBSON
CW STAFF

While some computer-aided software engineering (CASE) vendors are chafing over perceived delays in the announcement of IBM's long-anticipated repository, many of those same vendors will be lining up to announce their support for IBM's Cross System Product (CSP) June 20.

IBM has recruited a number of CASE tools vendors to announce interfaces of their products to CSP through the external source format (ESF) — a capability announced in CSP Version 3.2.2 in February.

The CSP announcement will not include the radically rewritten version of CSP that incorporates technology from Transform Logic Corp., an IBM spokesman said. In February, Index Technology Corp. and Knowledgeware, Inc. announced support of the ESF, which allows data from different CASE environments to be imported to and exported from CSP.

Although the coming announcement will create the appearance of widespread support for CSP, one vendor expected to participate stressed that his support is more for the future of CSP than for its current version.

"Saying we support CSP in its current state is marketing hype. A viable CSP, however, that's no problem," said Mike Lyons, president of Asyst Technologies, Inc. in Naperville, Ill.

"It [CSP] just doesn't do that much, so most of us are not impressed with it. Until they have full, good code generation, it's going to be tough," Lyons said, referring to the anticipated rewritten version of CSP that will generate Cobol code.

CA alters

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lease 8.0, which is in testing and will be released for general availability in September or October, according to Arnold Mazur, president of the Financial and Micro Products Group (FMPG).

C-Tec's Karney said he can understand why CA would want to include the database component, but added, "I can't say we're happy with the timing."

CA refused to reveal the price of the PC software components or the PC configuration required. The abrupt change in plans drew a skeptical response from one database expert.

"They are coming up with plans after plans after plans," said Shaku Atre, president of Atre Computer Assistance in Rye, N.Y. With Release 8.0 unavailable, Atre said she is "concerned with how they are going to make everything happen."

Karney, however, expressed enthusiasm about the 20% performance increase with CA-Datacom/DB technology that CA promised. He was also pleased with the workstation component but indicated his firm will not move toward cooperative processing until 1992.

John Tower, Financial Project leader at Alfa-Laval, Inc. in Fort Lee, N.J., who was briefed on the product, said that he supports the decision to use CA-Datacom/DB as the database, which maintains portability across all the platforms.

Nevertheless, Tower expressed concern. "We are afraid that the features and functions they have been promising for the past year or so will not be included," he said. "It holds us up with applications, because the decision was technology-driven and we are looking for features and functions in applications such as accounts receivable."

According to CA's Mazur, the company's research and development staff was able to put Datacom/DB behind the forthcoming Masterpiece 2.0 modules and push delivery dates ahead. The company previously anticipated that it would take about three years to bring Datacom/DB technology to the financial software, but it was able to do so sooner, he said.

The Masterpiece software for the mainframe environment was scheduled for beta testing and piecemeal delivery throughout this year and the next.

Masterpiece modules for DEC VAX processors and the IBM Application System/400 had been scheduled for beta testing later this year and early 1990, respectively. Mazur said CA will keep to the schedule and is "hopeful for availability in the second quarter of 1990."

When CA announced Masterpiece 2.0, it said that the product would cost 25% more than its predecessor. According to Mark Wasilko, FMPG senior vice-president of marketing, the increase in costs will remain the same and include the new database manager. Wasilko said that firms wanting to use the full features of CA-Datacom/DB must pay an additional license fee.

With Datacom/DB, Masterpiece 2.0 will offer the same promised functionality — a significant performance increase — and the ability to bring Masterpiece products out to the workstation, the company said.

Penn Mutual drill helps in staving off a fiery disaster

BY JAMES DALY
CW STAFF

PHILADELPHIA — As disasters go, the eight-alarm fire that hit the Penn Mutual Life Insurance Co. May 30 could hardly have come at a better time.

Just two weeks before the blaze forced the firm to relocate its IS operations to a nearby commercial disaster-recovery hot site, employees went through a disaster-recovery drill.

Computer gear on the seventh floor suffered extensive water damage as firefighters battled the blaze, which was raging in the records room two floors overhead, a city fire department spokesman said. The site houses two IBM 3081K mainframes, assorted tape drives and communications gear.

The cause of the blaze has not been determined.

Vice-President of Information Systems Paul Trainor said all but two minor applications were fully operational at Sungard Recovery Services, Inc.'s Philadelphia hot site less than 13 hours later.

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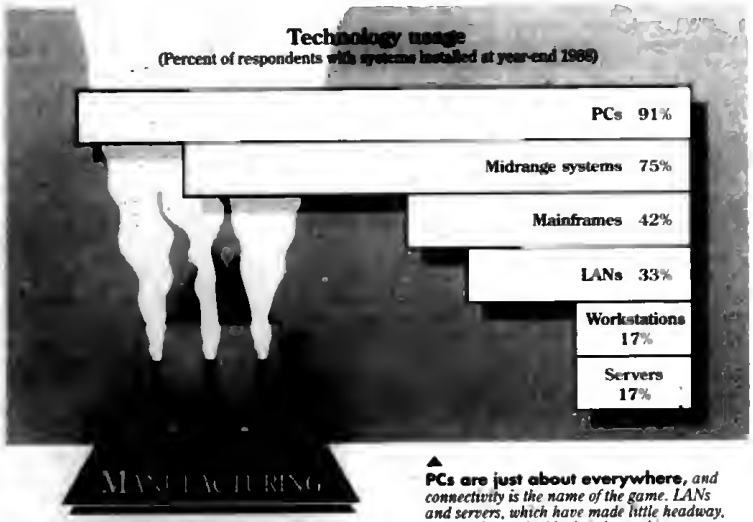
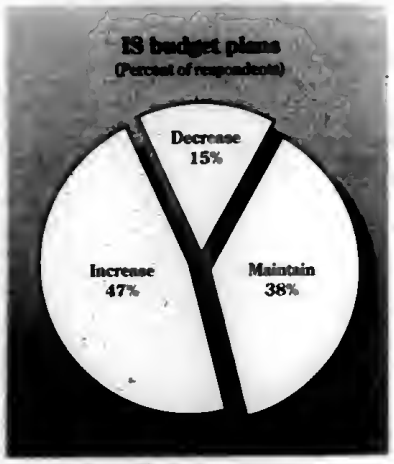


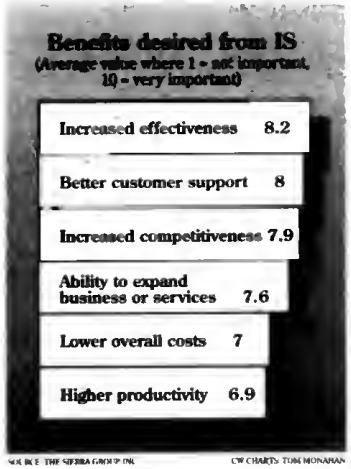
Fashioning plans for 1989: A survey of 459 IS managers at manufacturing firms examines the growing role of automation.

▲ **PCs are just about everywhere,** *and connectivity is the name of the game. LANs and servers, which have made little headway, should almost double their bases this year.*



▲ **Nearly half the firms** *are boosting their IS expenditures as they see an increasing need for hardware.*

Last year, *manufacturers were most concerned with the competition. Now, they want to be more efficient.* ▼


Benefits desired from IS
(Average value where 1 = not important, 10 = very important)
Increased effectiveness 8.2
Better customer support 8
Increased competitiveness 7.9
Ability to expand business or services 7.6
Lower overall costs 7
Higher productivity 6.9

SOURCE: THE SIERRA GROUP INC. CW CHARTS: TOM MONAHAN

COMING UP

In one of the world's largest information firms, the IS executive views himself as a catalyst. England native **Michael Field,** vice-president of customer IS at Dun & Bradstreet, is practicing the fine art of change by delegating responsibility. Field (right) is profiled in next week's Manager's Journal.

ANDY FREEBERG

Traditional micro DBMS products and new arrivals from the large-systems world are now converging on the micro platform. In Product Spotlight next week, you'll read about the best choices to make in this confusing scenario, now that all the vendors are claiming their products can do it all.

INSIDE LINES

How out-front can you get?

We're skeptical, but sources insist IBM is planning to announce a new line of Personal System/2s based on Intel's 80486 processor at PC Expo next week in New York. The product line will supposedly be able to attain more than 10 MIPS, the sources said. Intel has said the 486 won't even be shipped until the fourth quarter, but a source with a pipeline to IBM swears that the Biggest Blue, Chairman John Akers, wants to undercut public perception that IBM is falling behind in the PC industry.

Ruffled feathers

A recent memo from the chief has Lotus employees worried. The memo outlined four areas that Lotus will focus on: spreadsheets (obviously), databases, CD-ROM and graphics. Although the memo praised the success of other products such as Magellan and Agenda and pledged to press on with those efforts, people backing word processing, unshipped groupware such as Notes and stray utilities are worried about the future of their products. One Lotus source said that many employees misinterpreted the memo.

Promising to serve

Next week will see the unleashing of two new attacks on the database server market. Oracle will finally announce its OS/2 Server, which was supposed to have shipped earlier this year. And IBM will rally its OS/2 Extended Edition forces to show front-end support for this environment. But if you're looking for a product that is shrink-wrapped and ready to go, you'd best get something to read, like the *Encyclopaedia Britannica*!

Pssst, wanna buy some source code?

Various people around the industry recently received a package in the mail containing a floppy disk of closely guarded Apple Macintosh source code. An accompanying letter signed by the nuPrometheus League (Software Artists for Information Dissemination) says its goal is to see "the genius of a few Apple employees benefit the entire world . . . [and] not just dissipated by Apple through litigation and ill will." Apple officials called the situation "very serious."

Superego invited to the ball

The supercomputer world will take another much-needed step toward providing applications for the general business community next Monday when NCube announces a machine that will run both Unix and Oracle's DBMS.

Opening up the computer world

At this week's Usenix conference in Baltimore, the Open Software Foundation will announce a request for technology for distributed computing technologies that allow interoperability. No doubt Apollo's Network Computing Facility and Sun's Network File System will be in the running.

No free gifts, please

AT&T's latest ploy to boost its dwindling market share is to offer freebies — multiplexers, for example — as incentives to prospective buyers of its long-distance services. But the FCC reportedly nixed the plan on the grounds that it forges forbidden ties between AT&T's regulated telephone business and its unregulated equipment business.

Inside line to Hong Kong

"The situation is quite tense; the dismay and anger for what is taking place has affected us all. Everywhere you look, posters mourning the dead and pro-democracy are displayed. . . . On the small island where I live, over an expanse of water about a mile and a half, I have large People's Republic of China islands facing me, and the largest has about two or three battalions of the People's Liberation Army stationed. In the past, every Sunday morning you could hear large guns being fired — for practice only, I must say — but being so close you can imagine our thoughts." — Melvyn Bennett, *Computerworld Hong Kong.*

Last week we fouled up the hot line number; you can reach News Editor Pete Bartolik at 800-343-6474 or 508-879-0700. Our bulletin board can be reached at 508-626-0214

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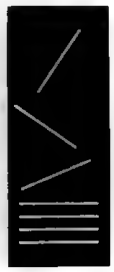

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